



Place a mark in the box indicating what organization you represent



**Federal
Agency**

**State
Agency**

**Non-Governmental
Agency**

Academia

Other

South Atlantic Coastal Study

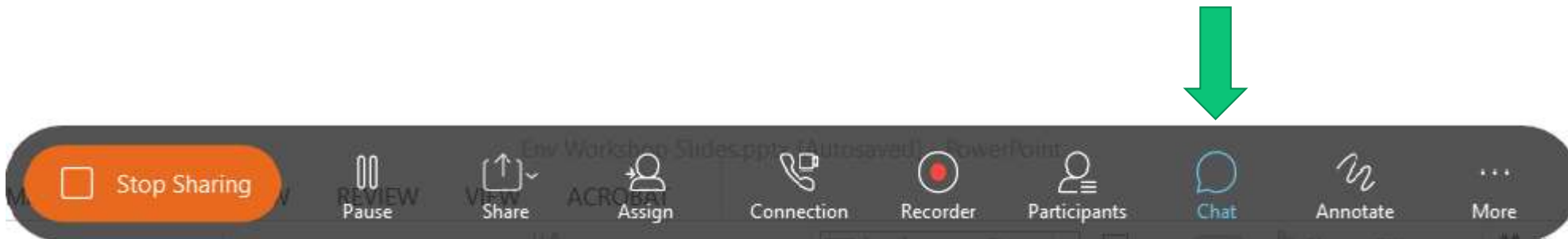




Housekeeping



- Everyone is joined in on listen-only mode
- There will be a Q&A period at the end of the presentation
- Feel free to use the chat function to submit questions during the presentation
- Presentation will be recorded
- Slides and recording will be posted to the SACS website:
<https://www.sad.usace.army.mil/SACS/>



Cultural Resources Webinar

South Atlantic Coastal Study

August 4, 2020

CONNECTION INFORMATION:

Webinar: <https://usace.webex.com/meet/Outreach>

Call-In: 888-398-2342

Access #: 7960291

Password: 7227



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SACS Cultural Resources Webinar: Agenda



SACS Overview

- Purpose
- Team Introductions
- Tier 1 Risk Assessment
- Tier 2
- SACS Products

At-Risk Cultural Resources by State and Territory

- North Carolina
- South Carolina
- Georgia
- Florida
- Alabama
- Mississippi
- Puerto Rico
- U.S. Virgin Islands

Next Steps and Closing Remarks

- How this information will be used in SACS
- How you can provide feedback
- Next Steps

Questions & Discussion

- Questions
- Open Discussion



Meeting Purpose



- 1** Present the cultural resources at risk to increased coastal storm damages as a result of sea level rise in each state and territory in the SACS study area
- 2** Obtain feedback from our stakeholders during and following this webinar on our identification of at-risk cultural resources
- 3** Explain how this information will be used in the study and the next steps



Team Introductions



Kristina May

Justin Bashaw

Ryan Clark

Lindsay Wilson

Lisa Clark

Baltimore District

Wilmington District

Jacksonville District

CDM Smith

Jacksonville District

Regional Environmental and Cultural Lead

North Carolina

**South Carolina, Georgia, Florida, Alabama,
Mississippi**

Puerto Rico, U.S. Virgin Islands

Regional Outreach Lead/Facilitator



Virtual Poll – How familiar are you with the South Atlantic Coastal Study?



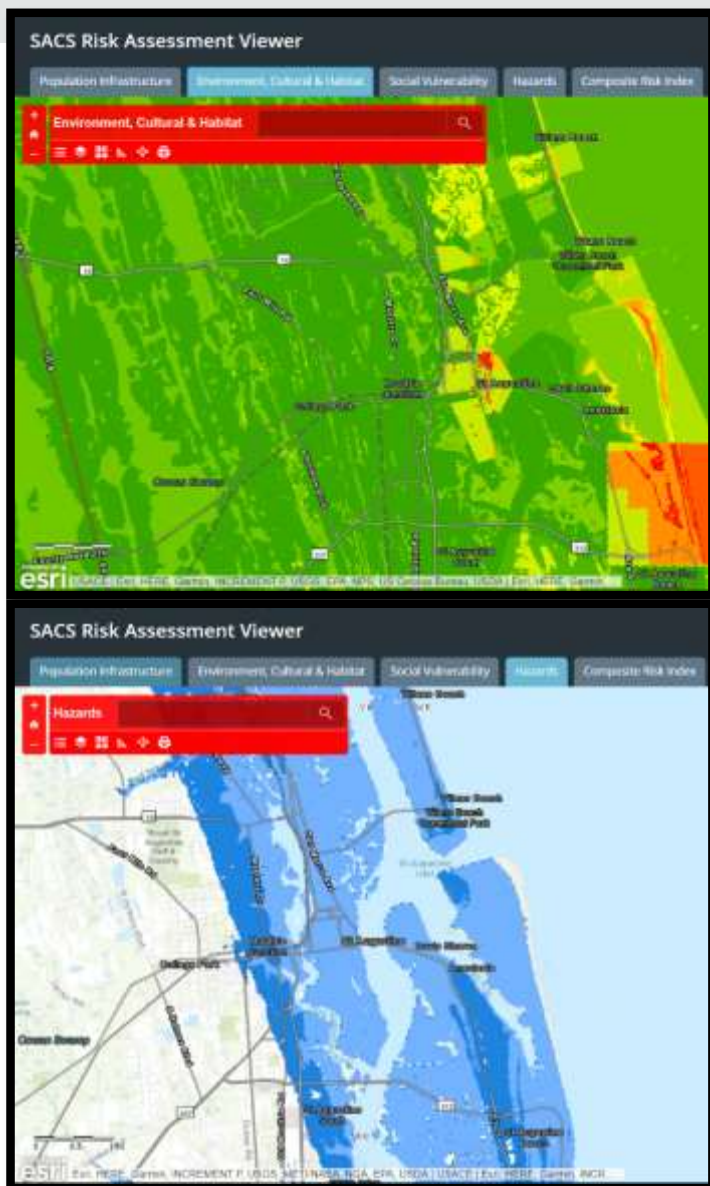
NOT FAMILIAR

SOMEWHAT FAMILIAR

VERY FAMILIAR



SACS Tier 1 Risk Assessment



Exposure: Number of assets, people, sensitive environment and cultural resources within the hazard footprint.

Three Exposure Indices

1. Infrastructure and Population
2. Environmental and Cultural Resources
3. Social Vulnerability

Hazard: Footprint of the hazard and probability of the hazard (Large footprint / Low Probability; Small Footprint / High Probability).

Three Extreme Water Level Events

1. Category 5 Hurricane Maximum of Maximums
2. 1% Annual Chance Flood (100 yr storm)
3. 10% Annual Chance Flood (10 yr storm)

*Sea level rise is included by adding 3 feet to the 1% and 10% events

Risk = Composite Exposure Index x Hazard

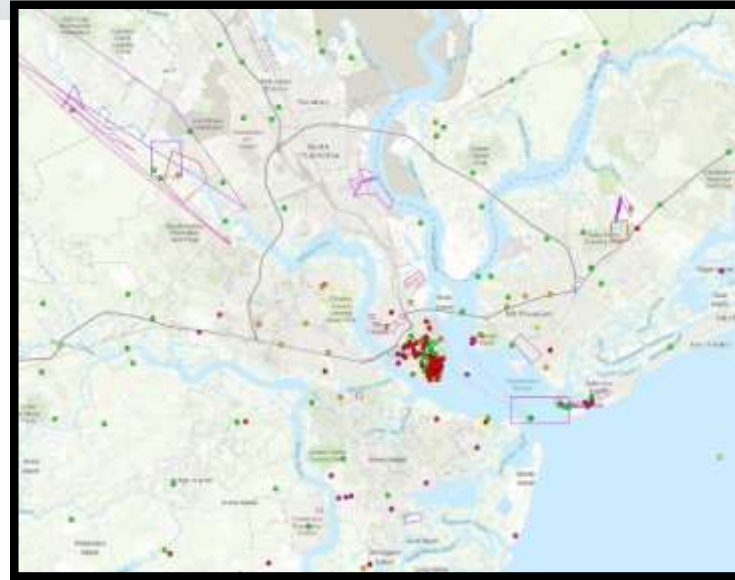


Tier 1: Composite Environment, Cultural, Habitat Index



Methodology

- Consistency with USACE North Atlantic Coast Comprehensive Study NACCS
- National GIS Datasets
- 30% Environment, 30% Habitat, 40% Cultural Resources
- 30% of Composite Exposure Index
- Risk = (Composite Exposure Index) x (Probability of Hazard)



UNEP WCMC



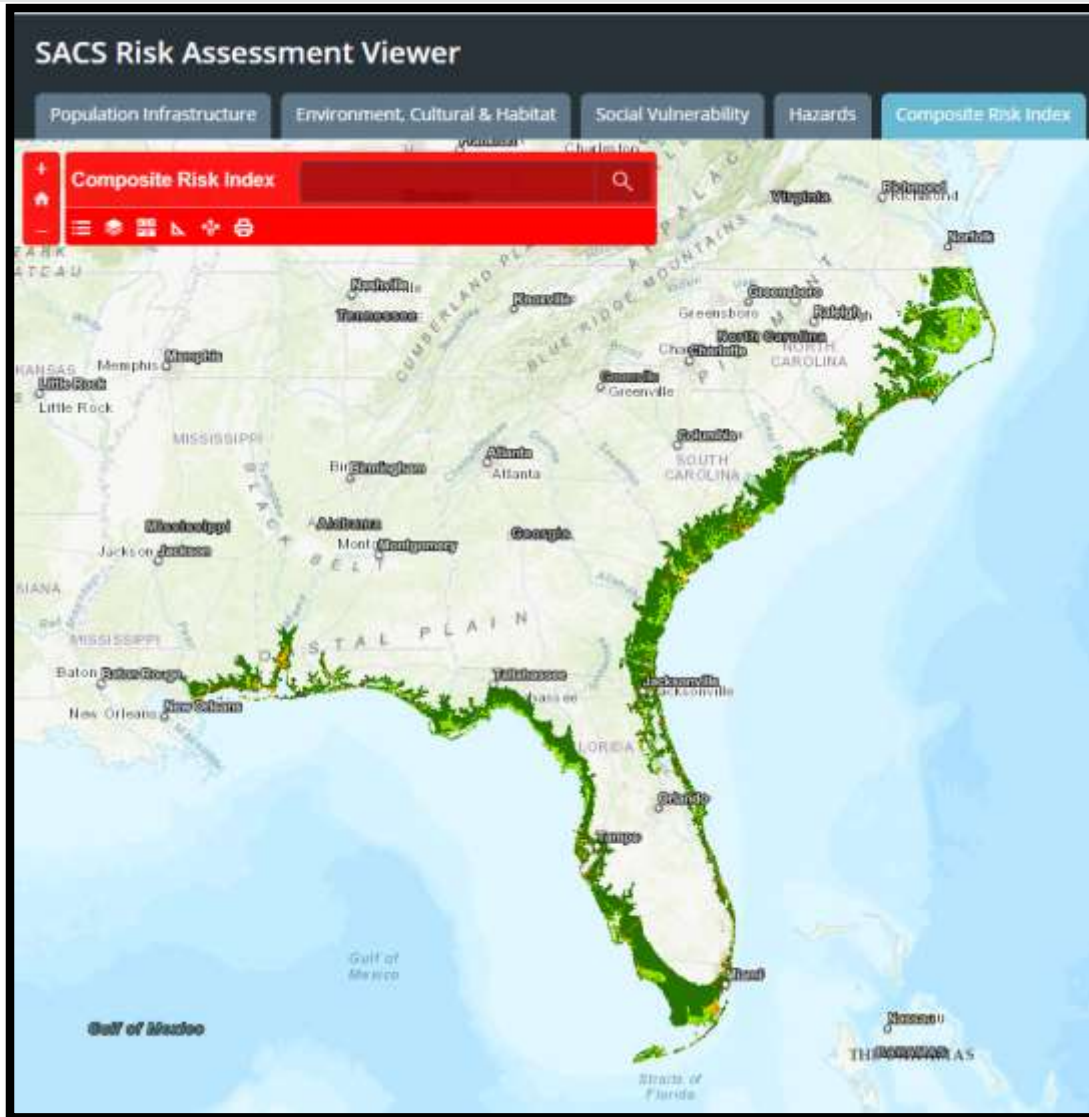
Audubon



NATIONAL
ESTUARINE
RESEARCH
RESERVE
SYSTEM

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- USACE's Coastal Hazard System (CHS) data: shows which areas experience a change in SLR
- Stakeholder discussions, Tier 1 is used for identification of High Risk Areas
- Tier 2 to go into further detail—can use local/regional datasets
- Identifies vulnerability reduction measures / resilience improvement measures
- Focus area action strategies



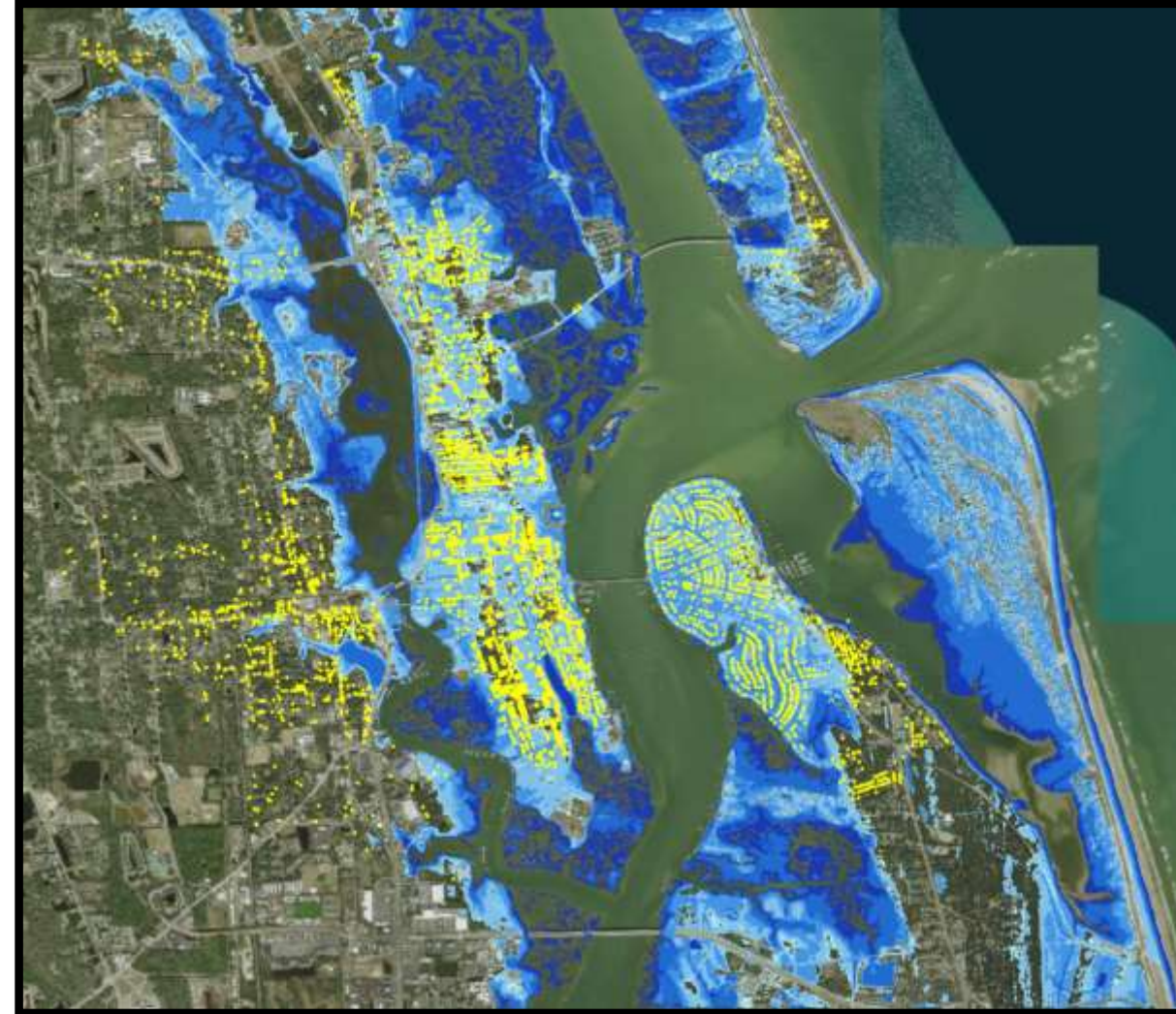
Tier 2: Revision of Exposure Element Data



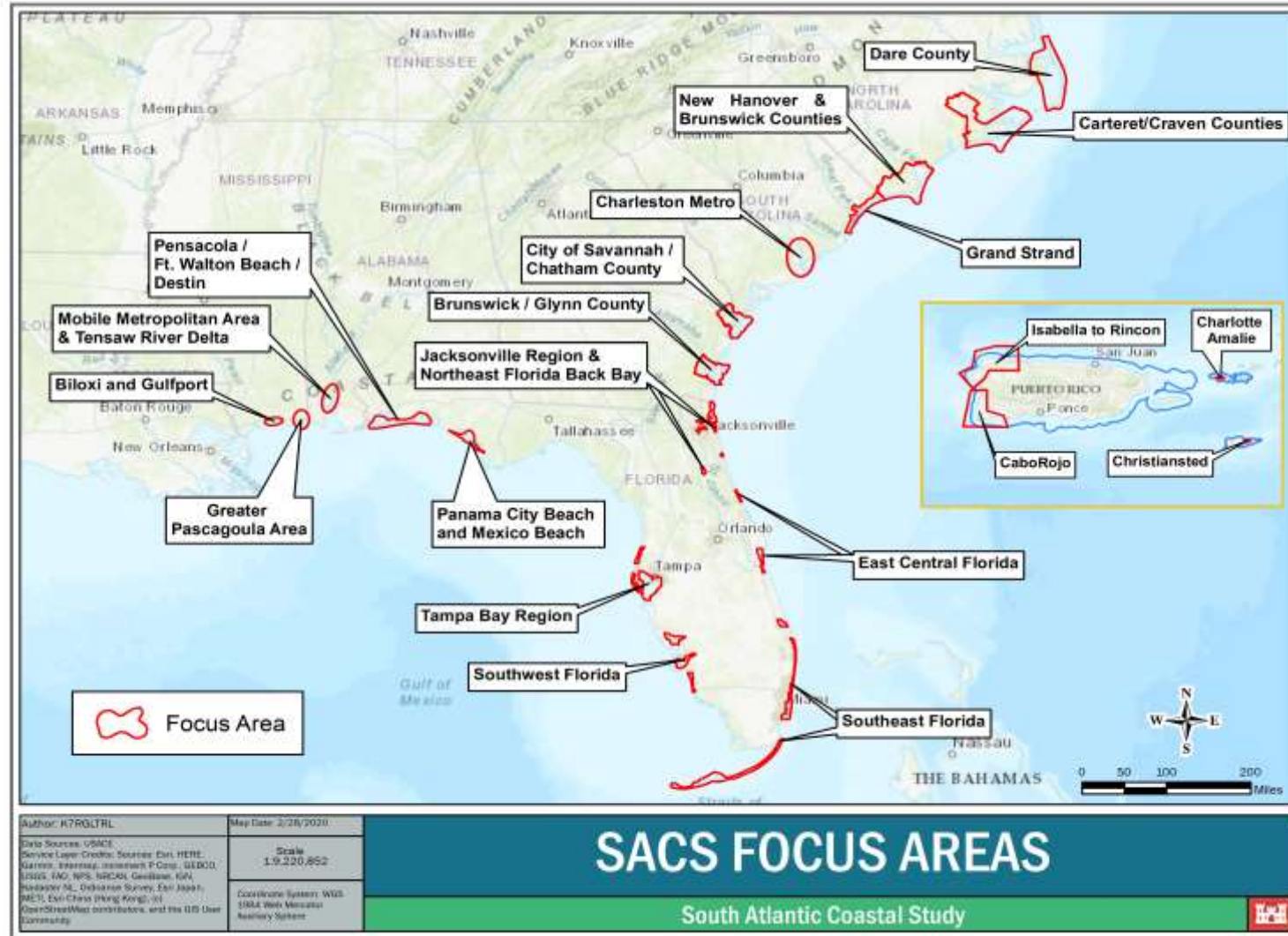
St Augustine 10% WL Present



St Augustine 10% WL + 3 ft SLR



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SOUTH ATLANTIC COASTAL STUDY KEY PRODUCTS

FOR MORE INFORMATION, VISIT THE SACS WEBSITE:
<https://www.sad.usace.army.mil/SACS/>



RISK ASSESSMENT



Assessment based on exposure of population and infrastructure, environmental and cultural resources, and social vulnerability to inundation hazards.



SACS TIER 1 RISK ASSESSMENT
<https://sacs.maps.arcgis.com/apps/MapSeries/index.html?appid=c54eb3072a04632958f2573e61151d>

REGIONAL SEDIMENT MANAGEMENT (RSM) OPTIMIZATION

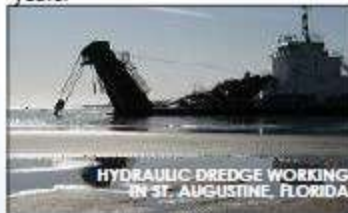


OPTIMIZATION PILOT:
 2016 USACE
 INNOVATION
 OF THE YEAR

Identifies and quantifies total contribution of RSM principles to projects in the SACS study area that support long-term coastal resiliency.

SAND AVAILABILITY & NEEDS DETERMINATION (SAND)

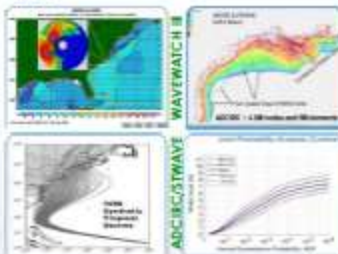
Determines the need and availability of sediment to maintain beaches for the next 50 years.



HYDRAULIC DREDGE WORKING IN ST. AUGUSTINE, FLORIDA

COASTAL HAZARDS SYSTEM (CHS)

Provides current and projected water elevation data for the study area.



JOINT PROBABILITY STORM COMPLEX

GEOPORTAL

Provides the public access to study datasets, products, and documentation.



HABITAT AND ENVIRONMENT DATASETS

POPULATION INFRASTRUCTURE DATASETS

HAZARD DATASETS

FOCUS AREA DATA
 DERIVED PRODUCTS



MEASURES & COSTS LIBRARY

Detailed list of Coastal Storm Risk Management (CSRM) measures and their costs developed to a screening level for use in USACE and stakeholder planning.



BEACH NOURISHMENT

COASTAL PROGRAM GUIDE

Outreach and information package to help communities better leverage needed resources on a disaster-wide, statewide, or community-wide basis.



VULNERABILITY ON THE OUTER BANKS

STATE & TERRITORY APPENDICES

Specific information for each state and territory will be provided in stand-alone appendices to the main report.



APPENDICES:
 North Carolina
 South Carolina
 Georgia
 Florida
 Alabama
 Mississippi
 Puerto Rico
 U.S. Virgin Islands

PRIORITY ENVIRONMENTAL IDENTIFICATION

Priority environmental areas will be identified using Tier 1 data, the USFWS Planning Aid Report, and stakeholder tools. Resiliency to coastal storms and sea level rise will be evaluated and measures to increase resiliency will be recommended.



TIER 1 ENVIRONMENTAL, CULTURAL & HABITAT EXPOSURE

PLANNING AID REPORT (U.S. FISH AND WILDLIFE SERVICE [USFWS])

Report of priority biological resource habitats in the South Atlantic region that are vulnerable to harm from coastal storms and sea level rise with a focus on areas used by federally listed species. Report will also include a description of risk to coastal national wildlife refuges.



USFWS, BON SECOURS NWR

INSTITUTIONAL & OTHER BARRIERS REPORT

Document identifies institutional and other barriers to providing comprehensive protection for affected coastal areas. The report will include information on the performance of existing federal CSRM projects and recommendations for improvement.



FLORIDA BEACH AFTER 1962 NOR'EASTER - WITHOUT FEDERAL CSRM PROJECT POST-STORM



FLORIDA FEDERAL CSRM PROJECT POST-TROPICAL STORM FAY, 2008

FOCUS AREA ACTION STRATEGIES

Focus area action strategies (FAAS) will use SACS products in combination with other resources to develop actionable risk reduction strategies with stakeholders. FAAS will serve as examples for how vulnerabilities in other high risk locations can be addressed.



SOUTH ATLANTIC REGION HURRICANES





At-Risk Cultural Resources by State and Territory

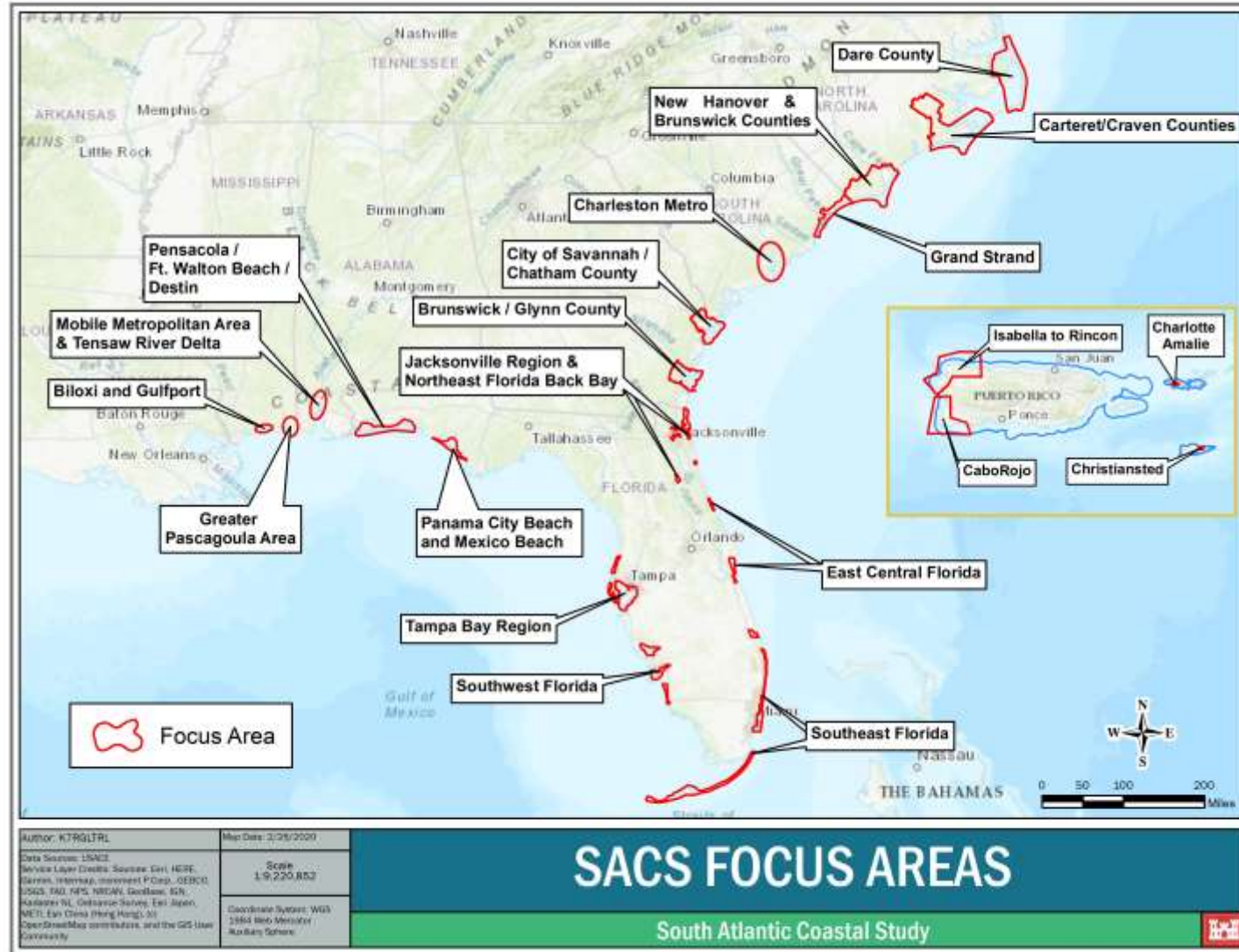
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North Carolina

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Tier 2: SACS Focus Areas



Tier 2: North Carolina Planning Reaches

- The State of North Carolina contains 2 SACS planning reaches

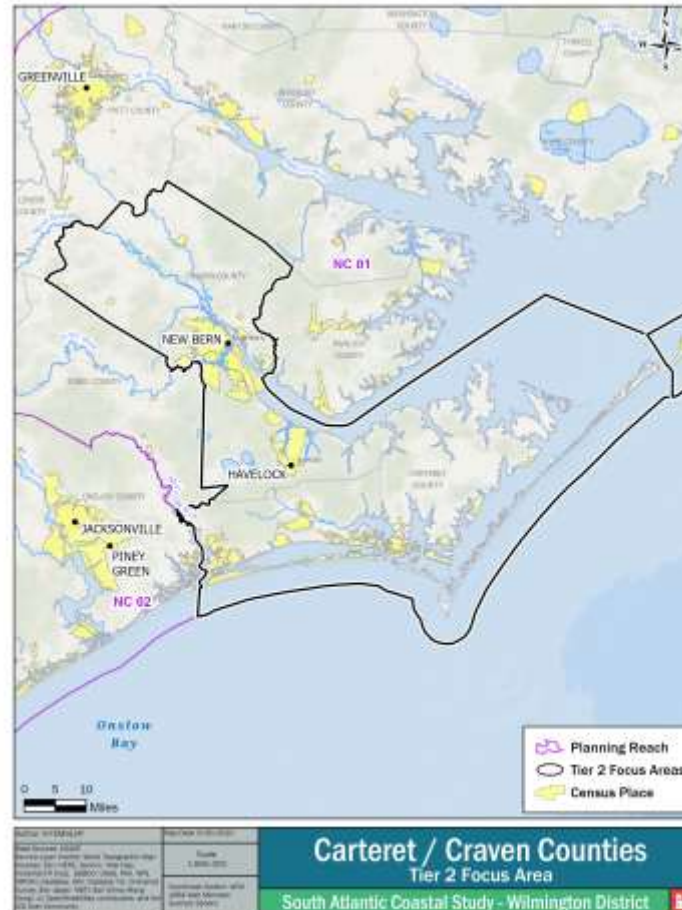
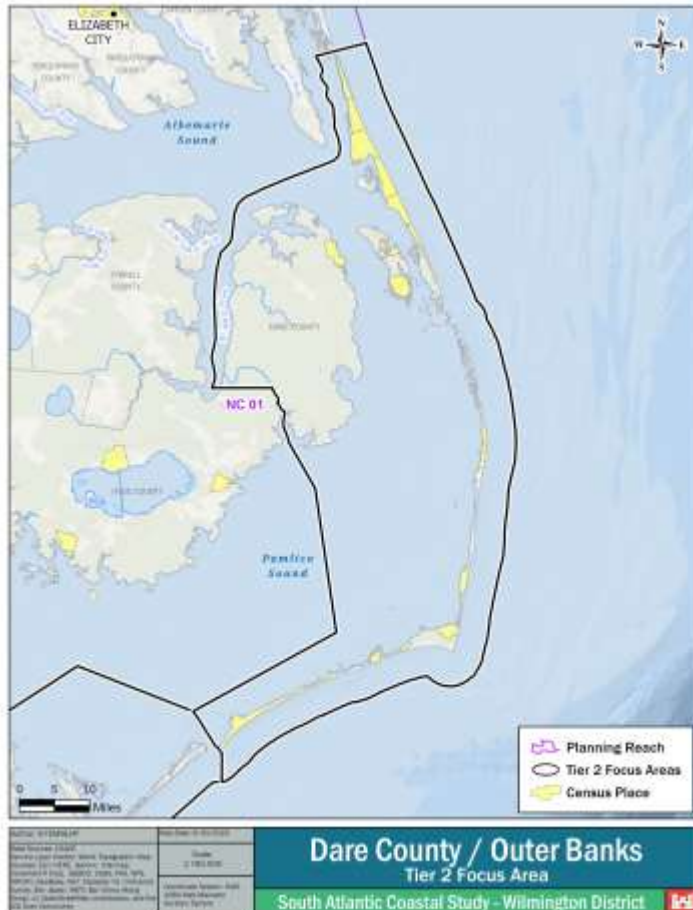




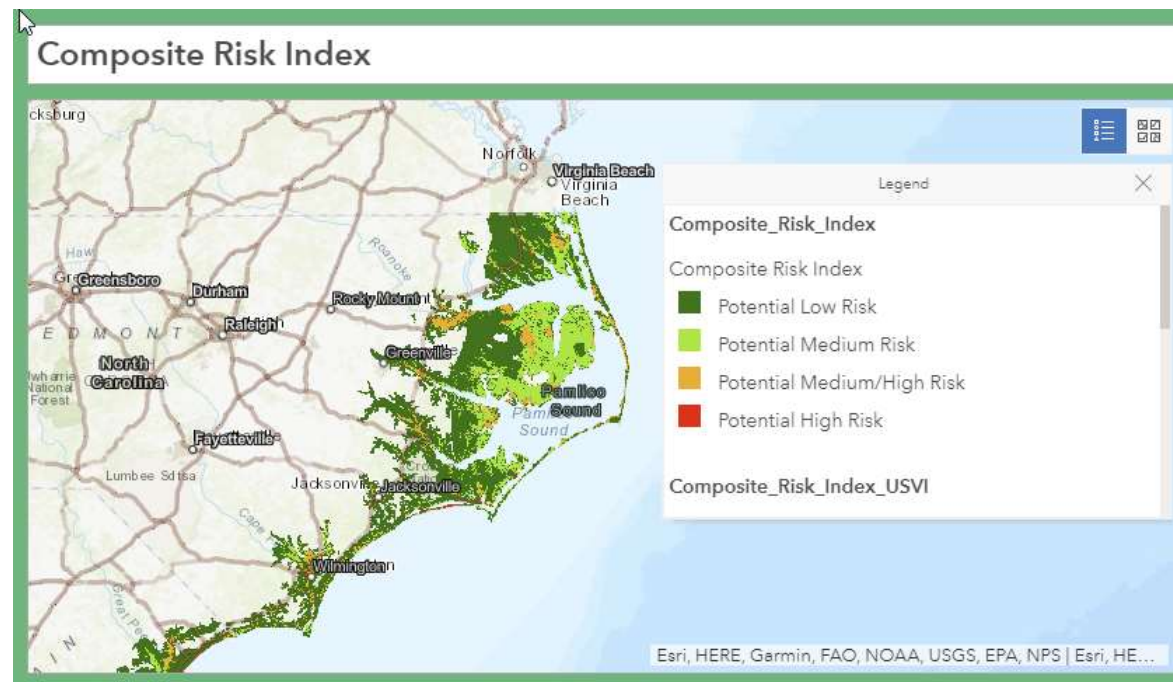
Tier 2: North Carolina Focus Areas



- The State of North Carolina contains 3 SACS focus areas



- **The Tier I composite risk index incorporates**
 - Infrastructure population exposure index
 - Combined hazard present
 - Environmental, cultural, & habitat index
- **Following Tier I analyses, few areas were identified as “potential high risk”**
 - The purpose of this workshop and future engagement with stakeholders is to refine this understanding, with a focus on cultural resources





Tier 2: North Carolina, Examples of Unique Cultural Resources



- **Dare County / Outer Banks (including Ocracoke)**

- Fort Raleigh National Historic Site (1)
- Ocracoke Light Station (2)



- **Carteret / Craven Counties**

- Beaufort Historic District (3)
- Cape Lookout Lighthouse (4)



- **Brunswick / New Hanover Counties**

- Battleship North Carolina (5)
- Brunswick Town / Fort Anderson (6)





South Carolina

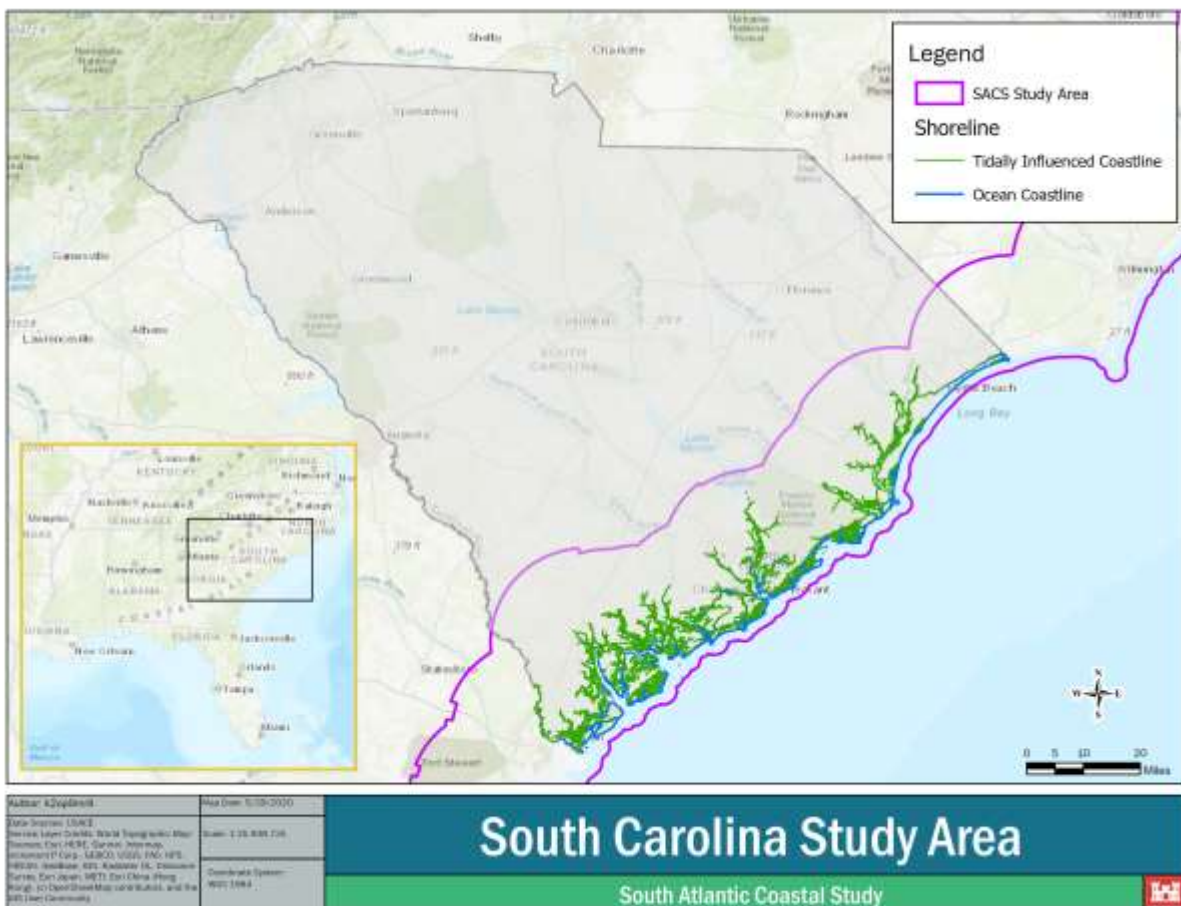
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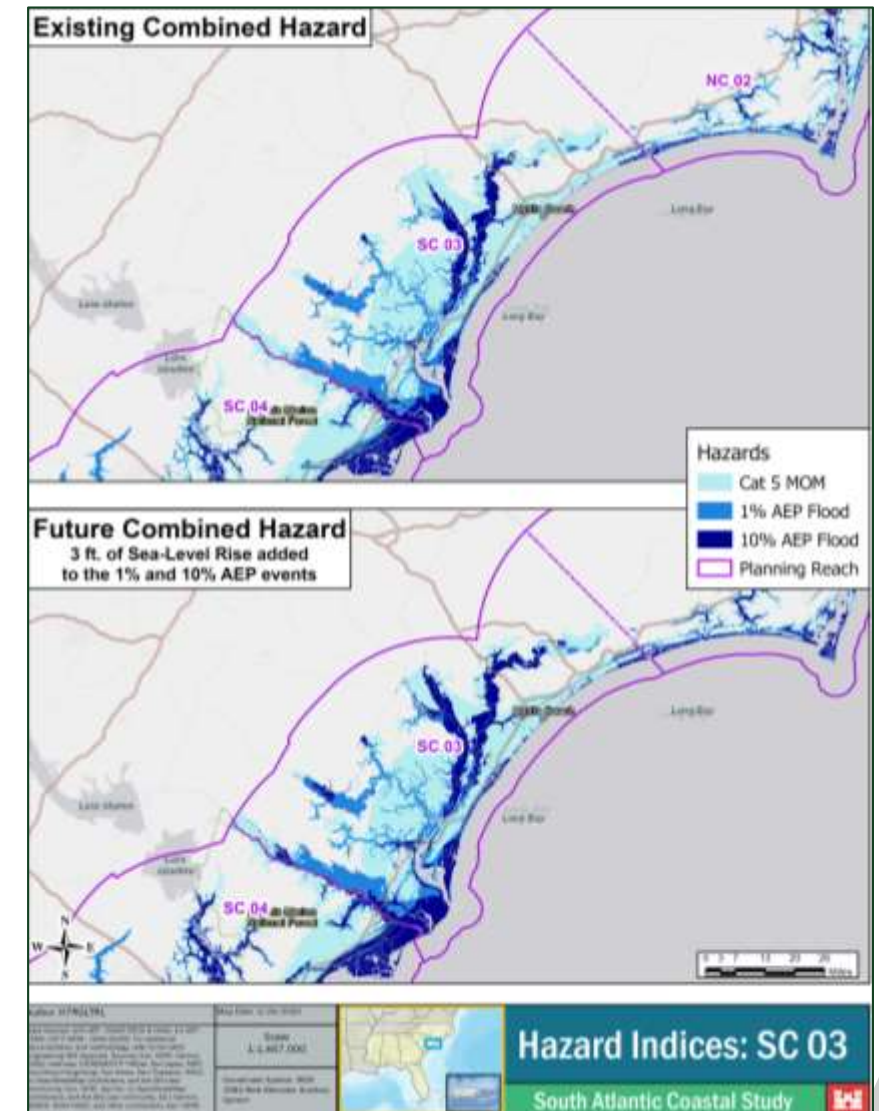
Tier 2: South Carolina



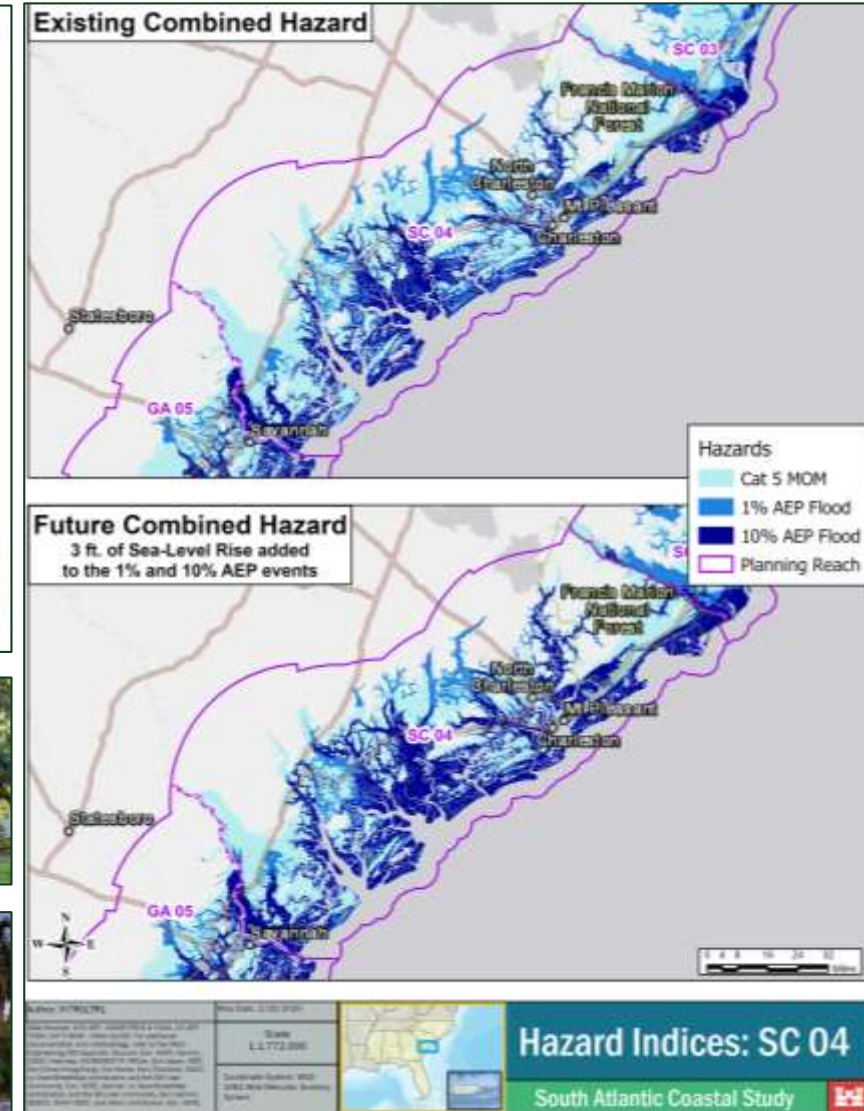
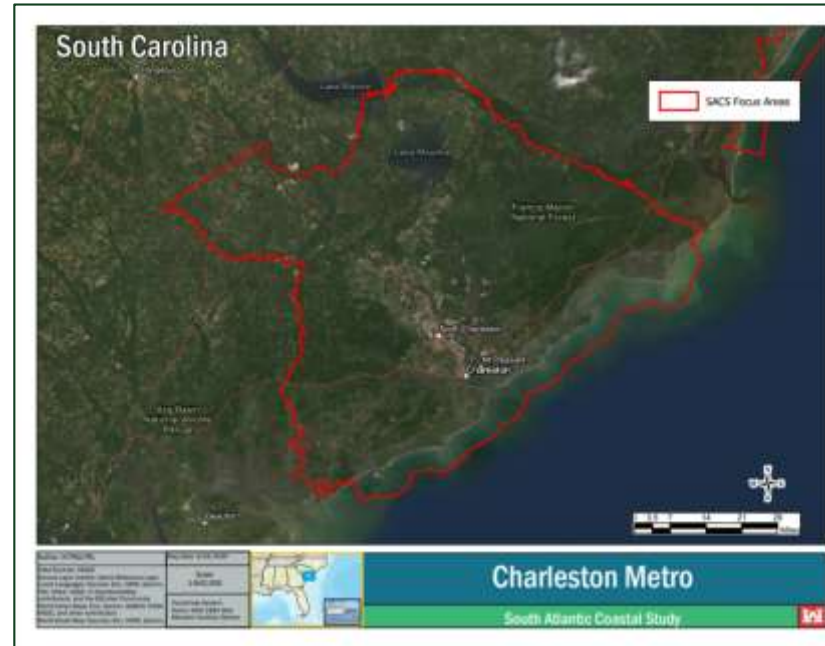
- The State of South Carolina contains 2 SACS planning reaches



- The State of South Carolina contains 2 SACS Focus Areas.



- There are over 12,708 known archaeological sites, standing structures and resource groups in this reach.
- Highest concentrations near rivers, the coast and on barrier islands in Charleston and Beaufort Counties (n=5,777).
- Charleston MetroFocus Area
 - Charleston
 - Willtown Bluff
 - Grove Plantation
 - Daufiskie, Hilton Head and St. Helena





Georgia

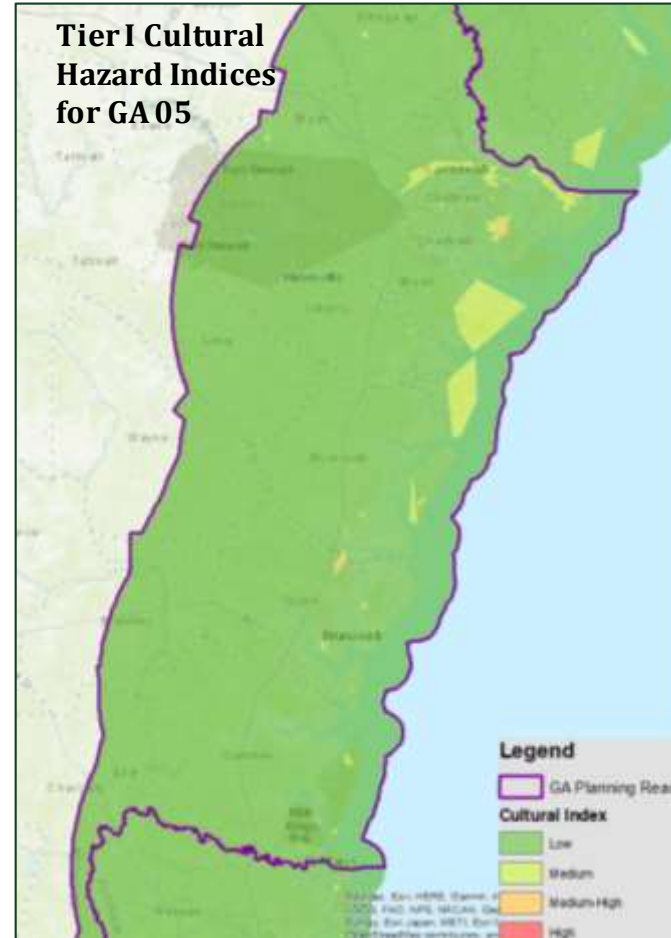
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Tier 2: Georgia



- The State of Georgia contains 1 SACS planning reaches
- Georgia Focus Areas
 - Chatham County
 - Glynn County

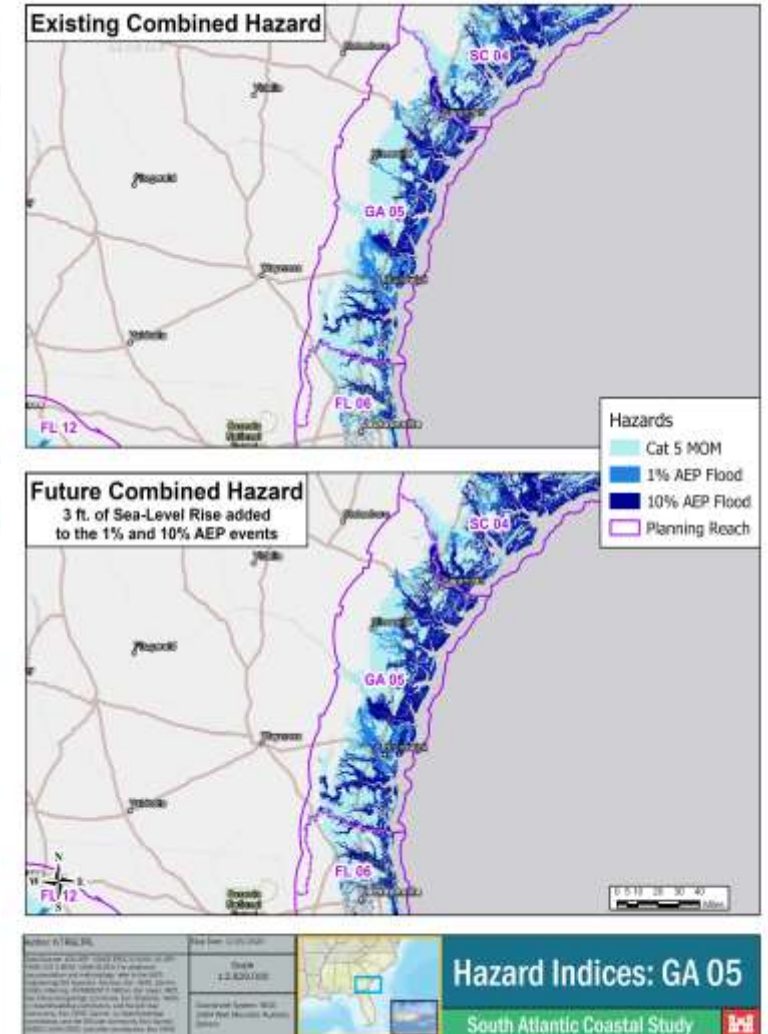
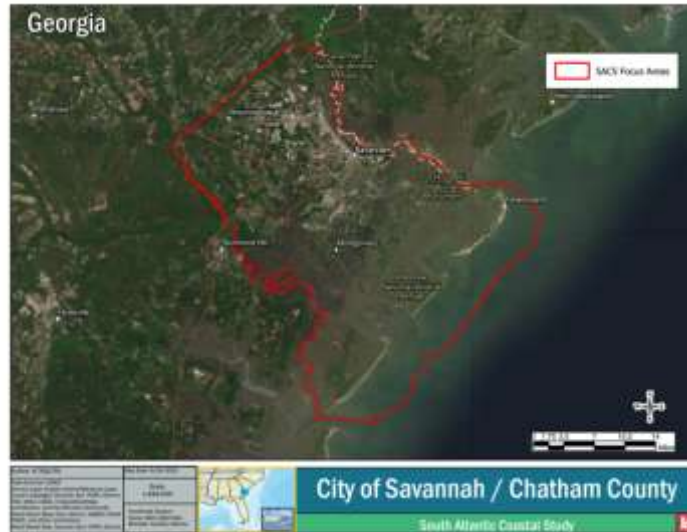




Tier 2: Georgia Reach 5, Chatham County



- **5,720 historic resources are listed for Chatham County, with high concentrations of the resources located in downtown Savannah, the outskirts of Savannah on Isle of Hope and on Tybee Island.**
 - **Tybee Island and the Savannah Historic District**
 - **McIntosh County- Sapelo Island and the Hog Hammock Community**
 - **Liberty County- Fort Morris Historic Site State Park:**

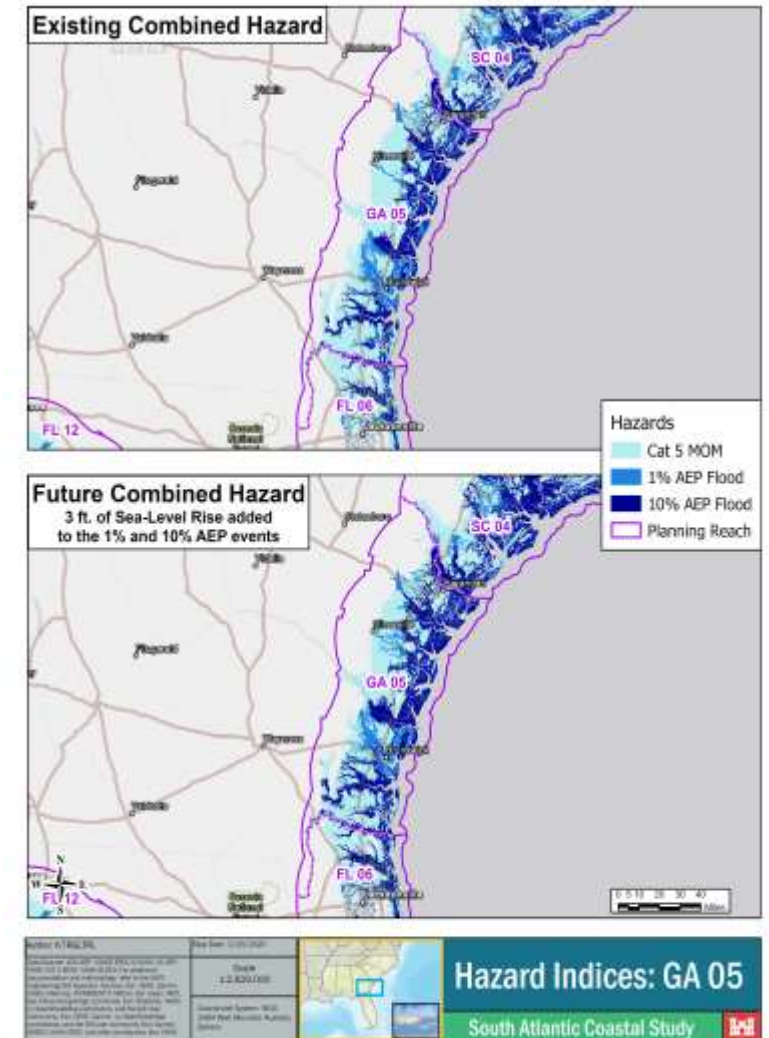
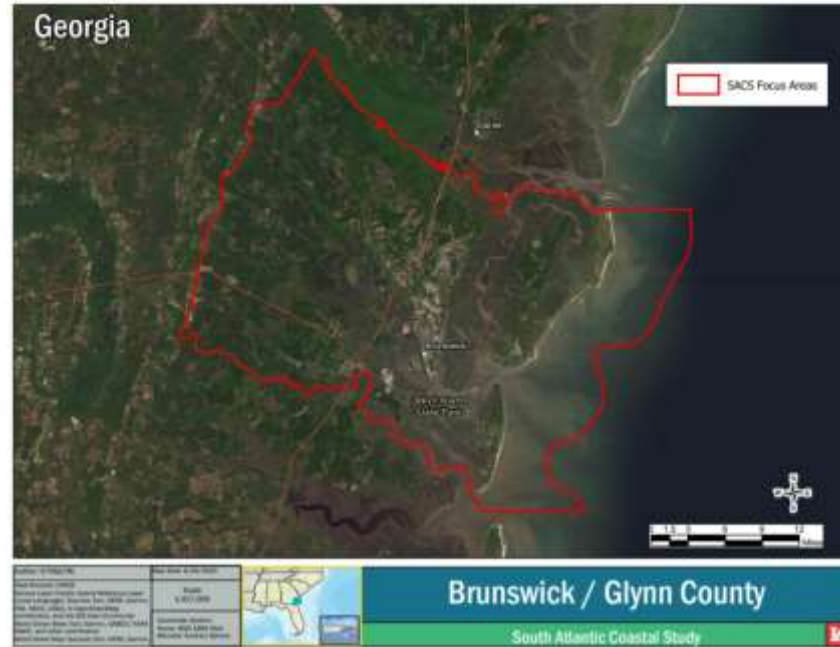




Tier 2: Georgia Reach 5, Glynn County



- **3,390 records for historic resources in Glynn County.** The majority of these resources are buildings and structures. The historic resources are located primarily near the coast of St. Simons and Jekyll Islands and near Brunswick.
- **St. Simons Island, Jekyll Island**
 - Indian Mound Cottage/Historic District
 - Over 400 historic resources are located on St. Simons Island that range in construction from the 1700s – 1960s.



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Florida

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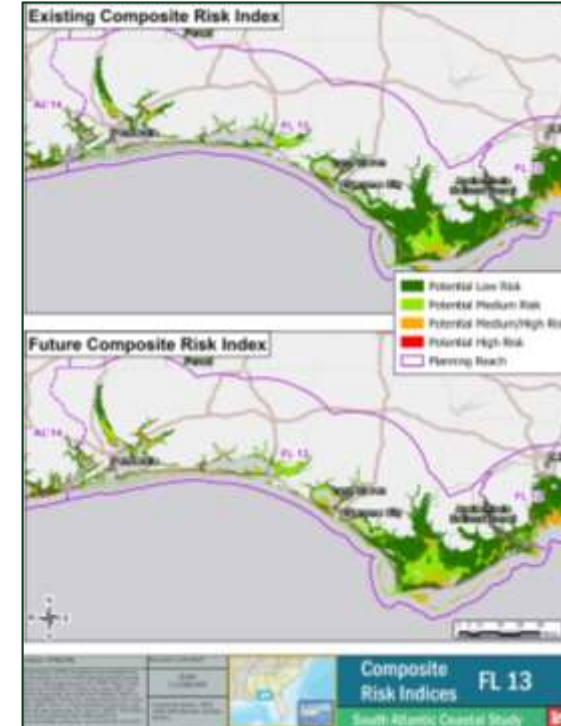
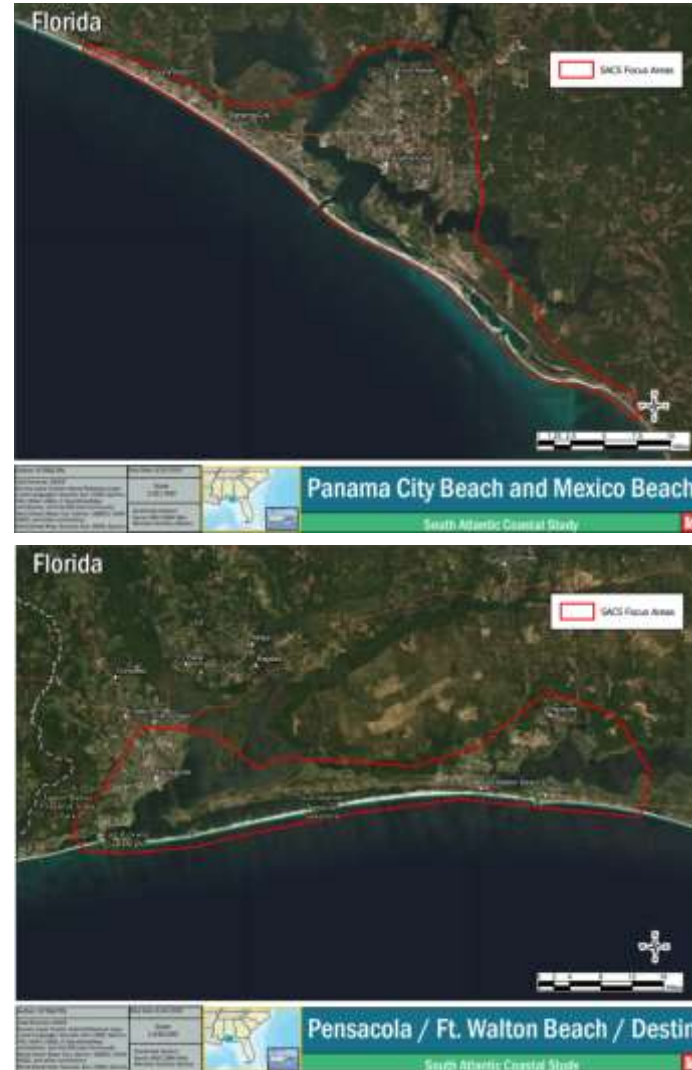




Tier 2: Florida Panhandle, Pensacola/Ft. Walton Beach/Destin and Panama City Beach and Mexico Beach Focus Areas



- There are over 14,700 known archaeological sites and standing structures in the inundation zone and the inundation plus SLR zone.
- Of these, 8895 are standing structures, with the remainder consisting of prehistoric and historic archaeological sites.
- Pensacola, Fort Walton, Panama City
 - St. Andrews State Park
 - Eglin Field Historic District
 - Fort Pickens



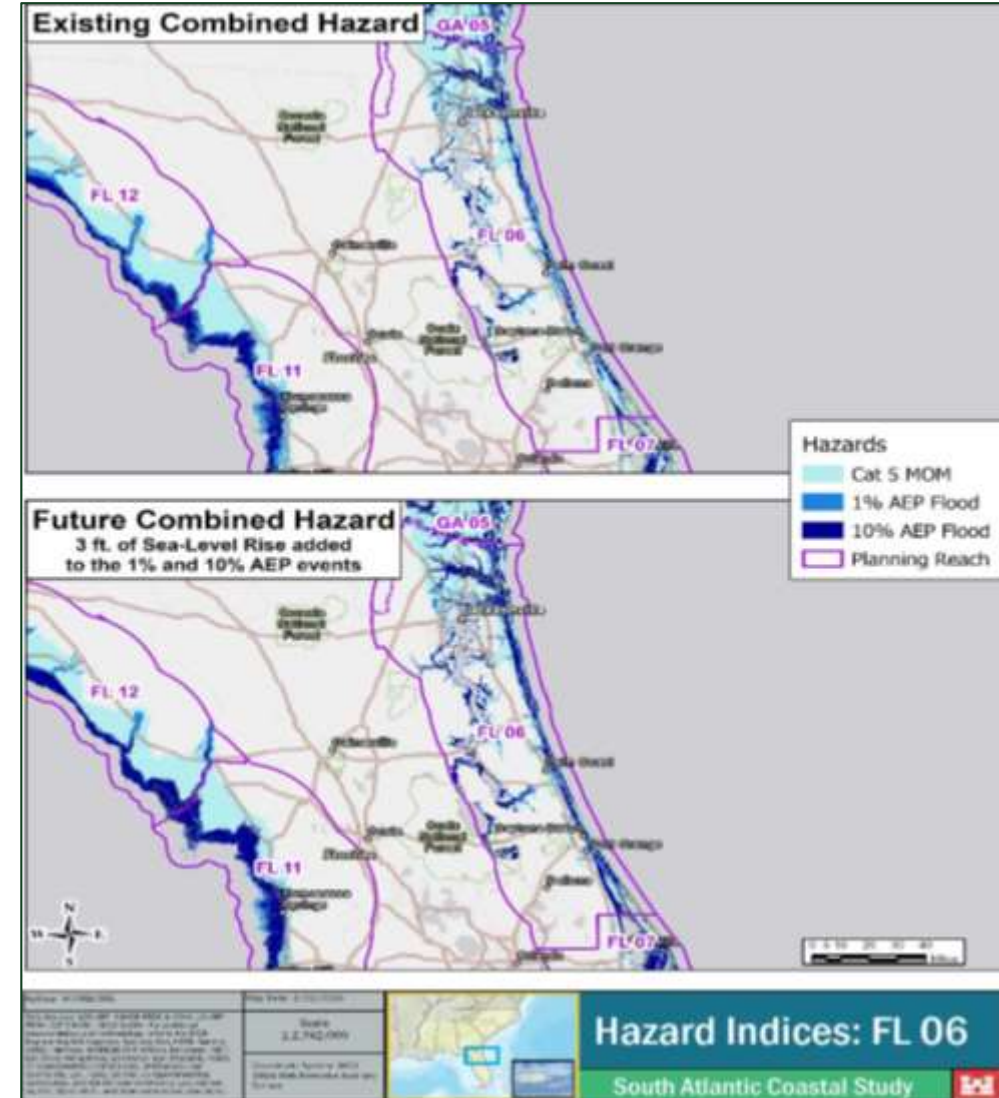
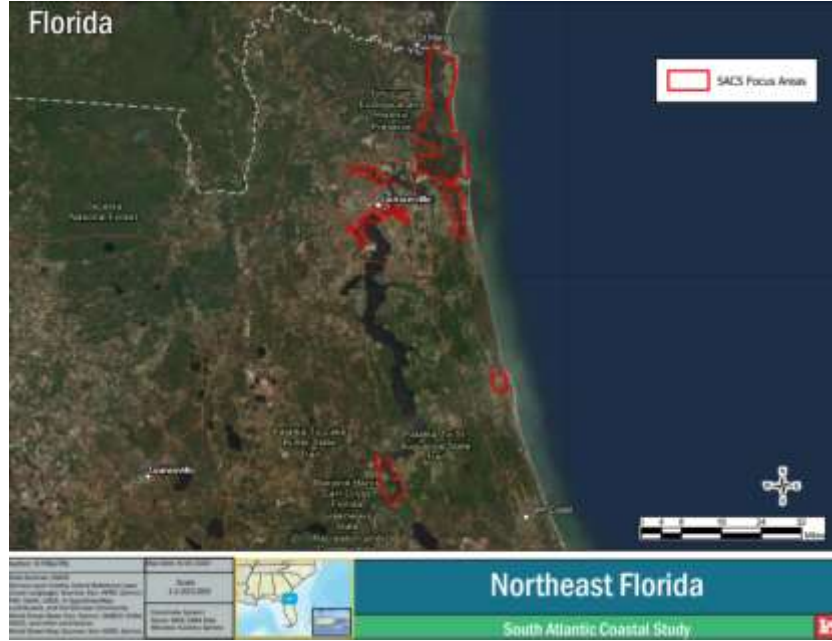
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Tier 2: Northeast Florida Focus Area



- This reach holds three areas of high resources exposure
- Timucuan Ecological and Historical Preserve & Fort Caroline National Memorial
- GTM Preserve & Fort Matanzas



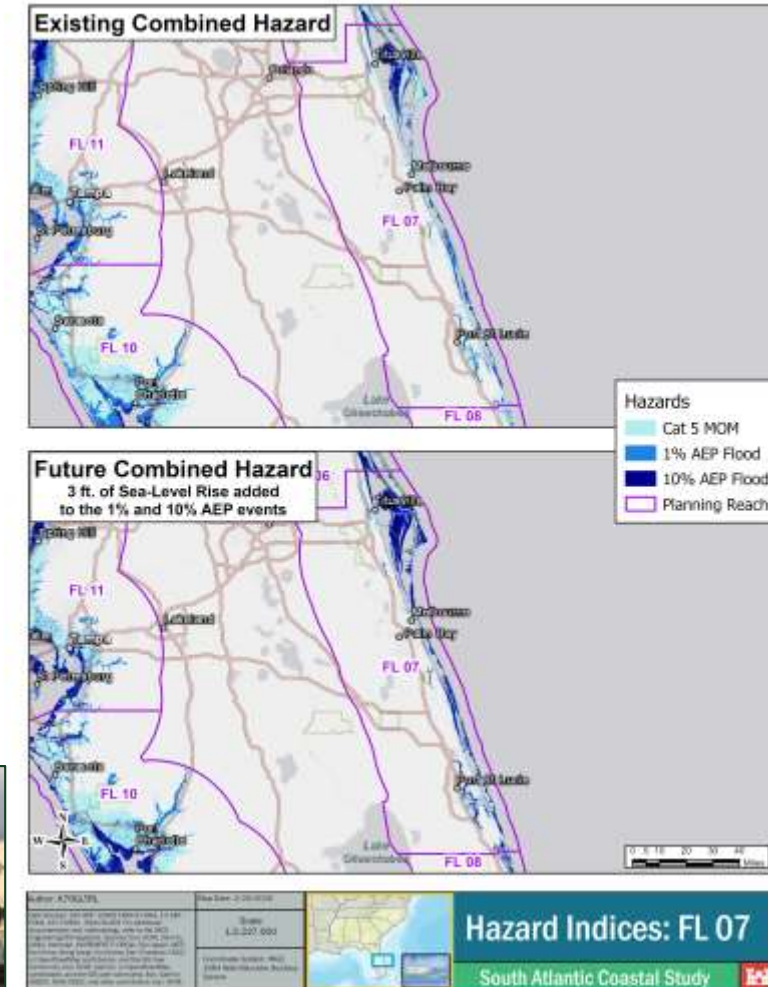
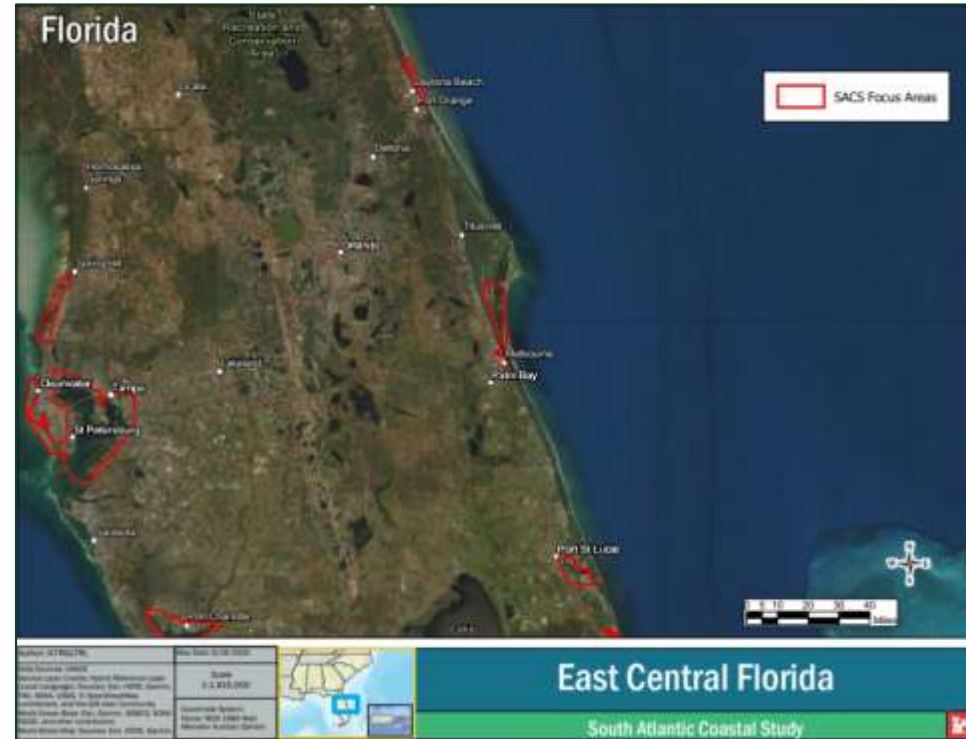
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Tier 2: East Central Florida Focus Area



- Titusville (Merritt Island), Sebastian, Fort Pierce, Indian River Lagoon
- Merrit Island also includes a variety of NASA facilities at Kennedy Space Center which are historically significant.
- Sebastian is home of the nation's first National Wildlife Refuge.



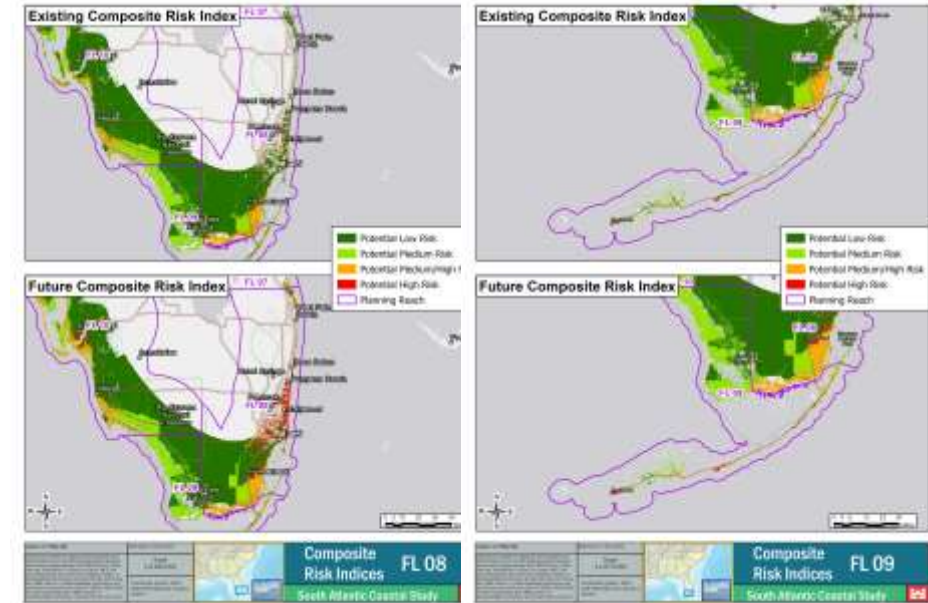
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Tier 2: Southeast Florida Focus Areas



- **Historic Stranahan House and Museum, Jupiter Inlet Lighthouse, Biscayne National Park, Miami/Miami Beach**
- **Key West, Pigeon Key, Key Largo**



Jupiter Lighthouse



Historic Miami



Biscayne National Park



Florida Keys

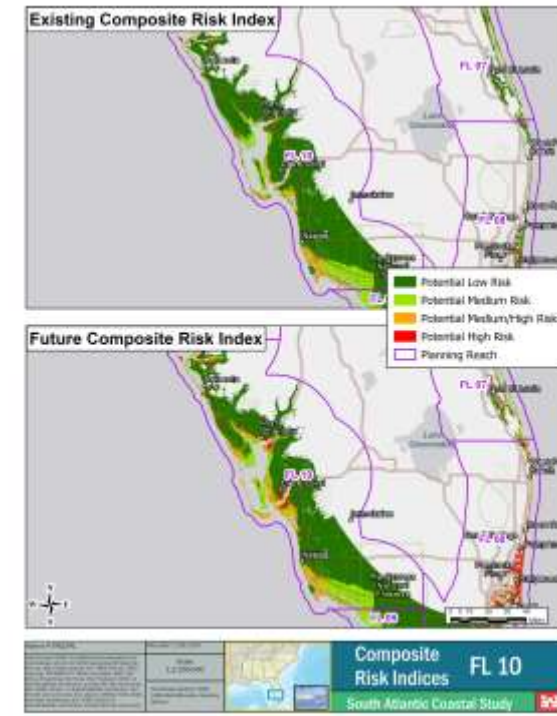
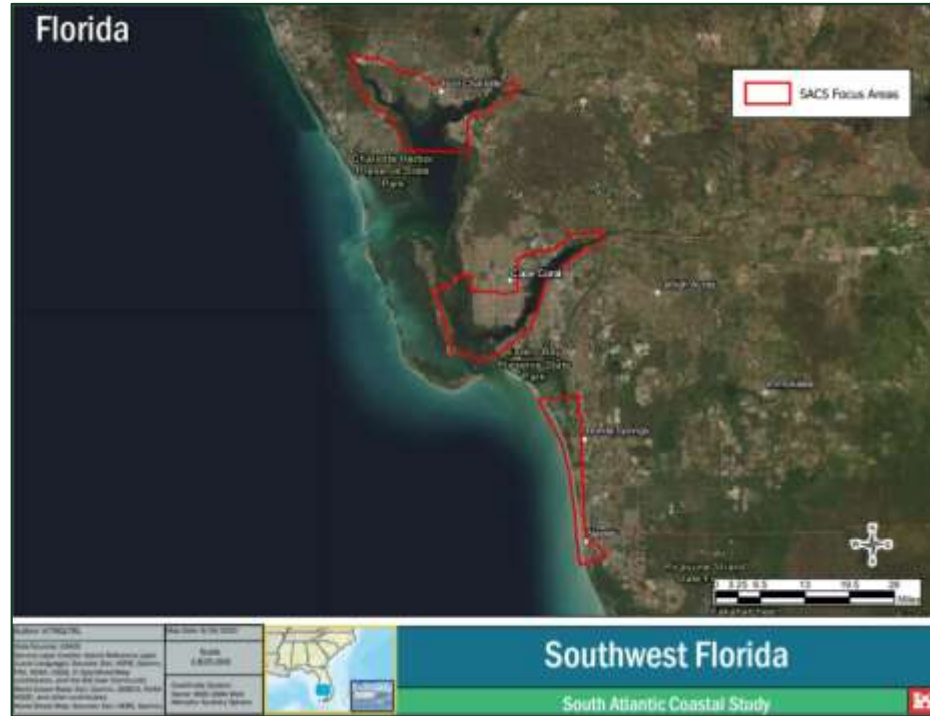
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Tier 2: Southwest Florida Focus Area



- This reach holds 150 sq. miles of high exposure
- Goodland, Ding Darling National Wildlife Refuge, and Cayo Costa State Park.



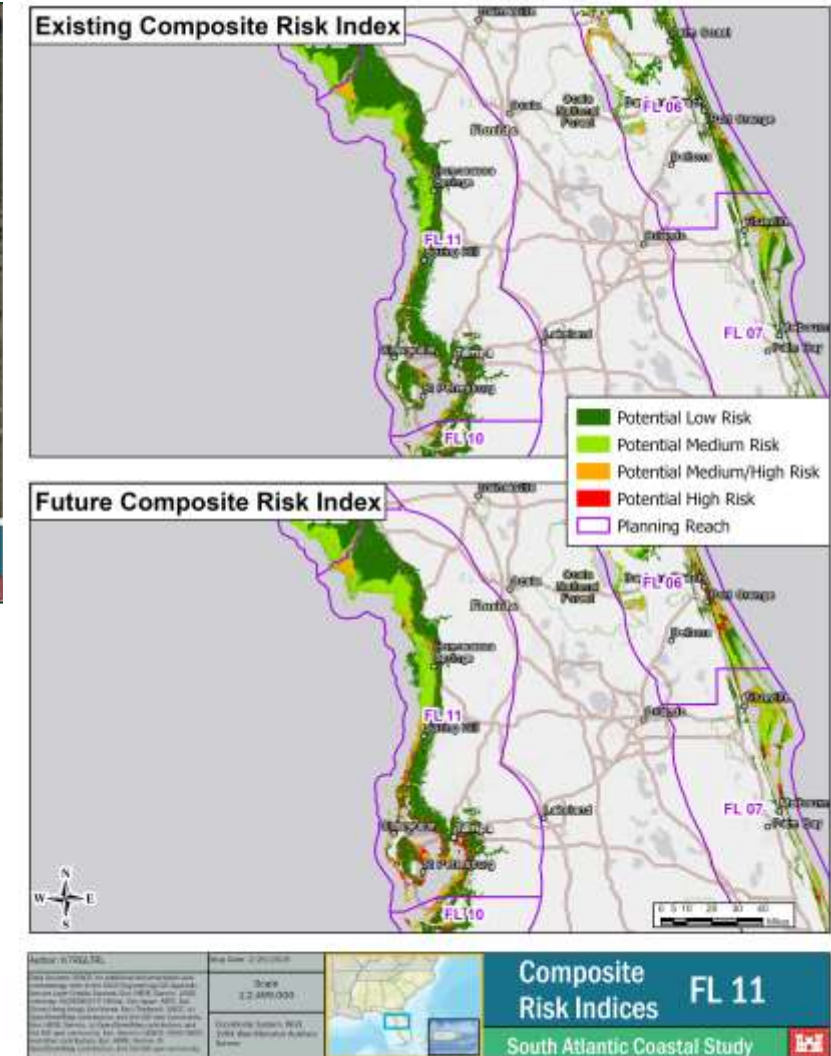
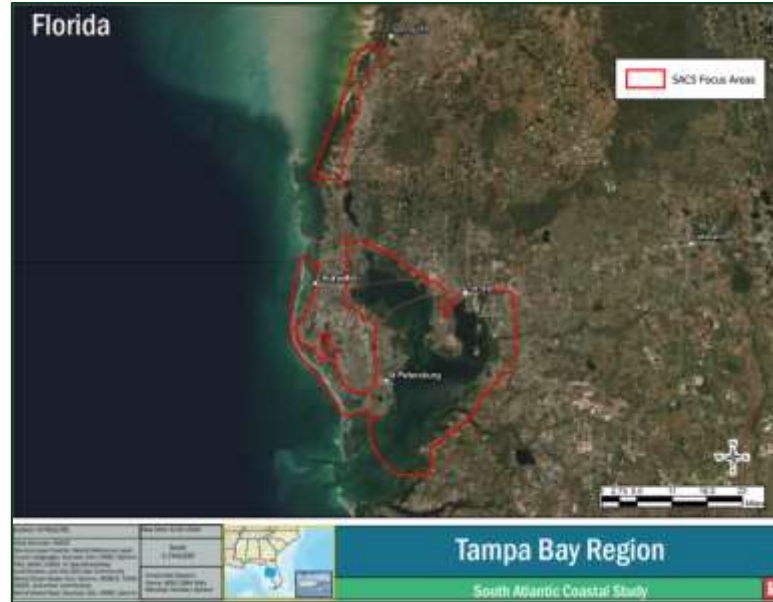
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Tier 2: Florida, Tampa Bay Region Focus Area



- Egmont Key State Park, Caladesi Island State Park



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Alabama

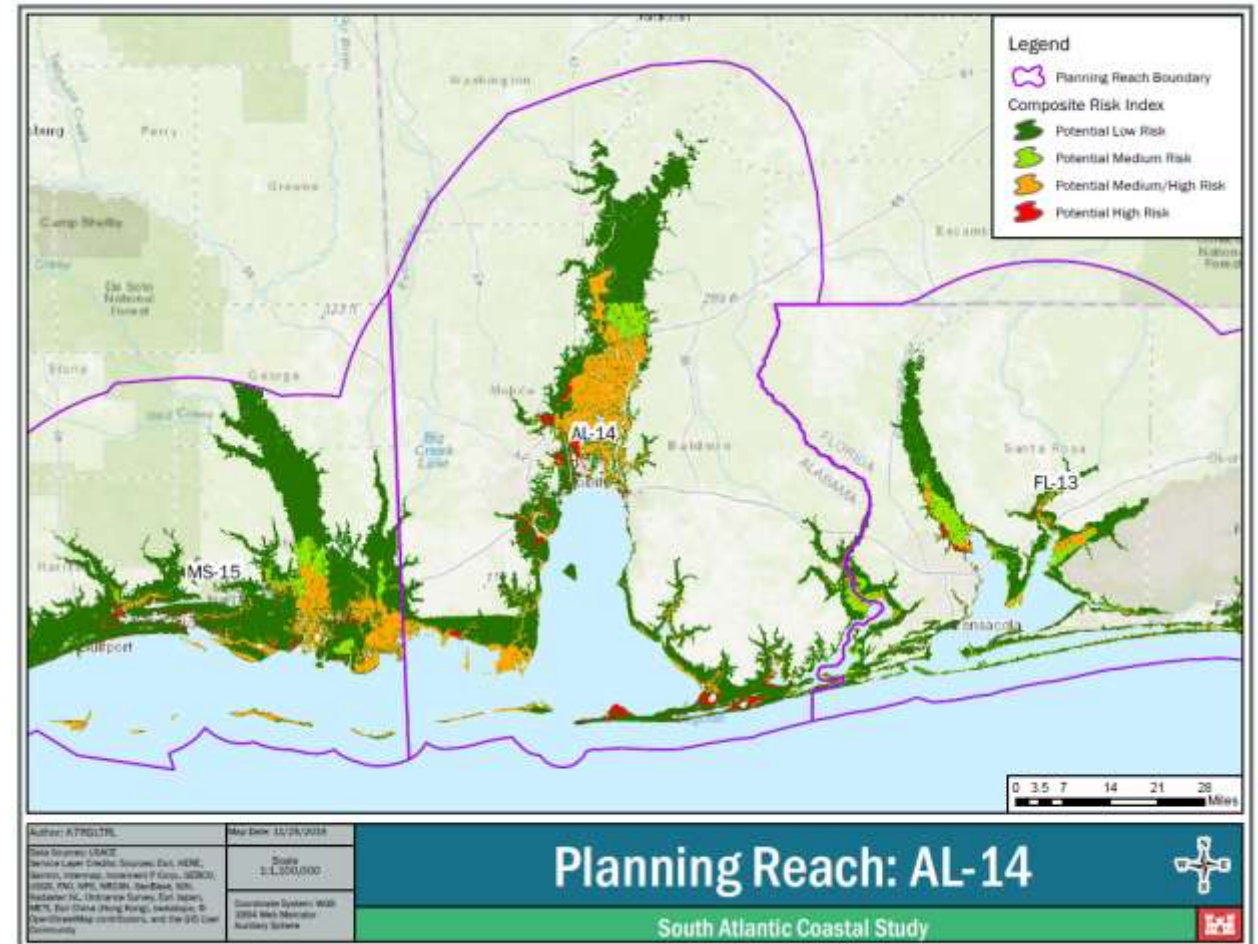
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Tier 2: Alabama



- The State of Alabama contains 1 SACS planning reaches
- Alabama Focus Area
 - Mobile Metropolitan Area & Tensaw River Delta
- There are 3,964 known archaeological sites and 283 National Register of Historic Places eligible properties within 125 miles of the coast that are at risk of sea-level rise, storm surge and subsidence, according to the Office of Archaeological Research (OAR).



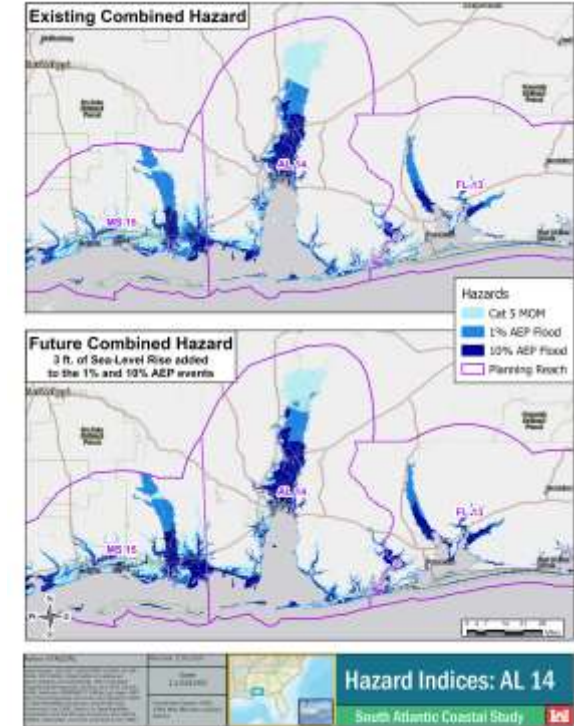
- The State of Florida contains 1 SACS Focus Area



Tier 2: Mobile Metropolitan Area & Tensaw River Delta



- Approximately one third of the known sites are historic sites, with the remainder consisting of a variety of prehistoric sites.
- Blakely State Park, Bottle Creek Indian Mounds, Mobile-Bay:Fort Morgan, Dauphin Island: Indian Mound Park, Clotilda, MTRD



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Mississippi

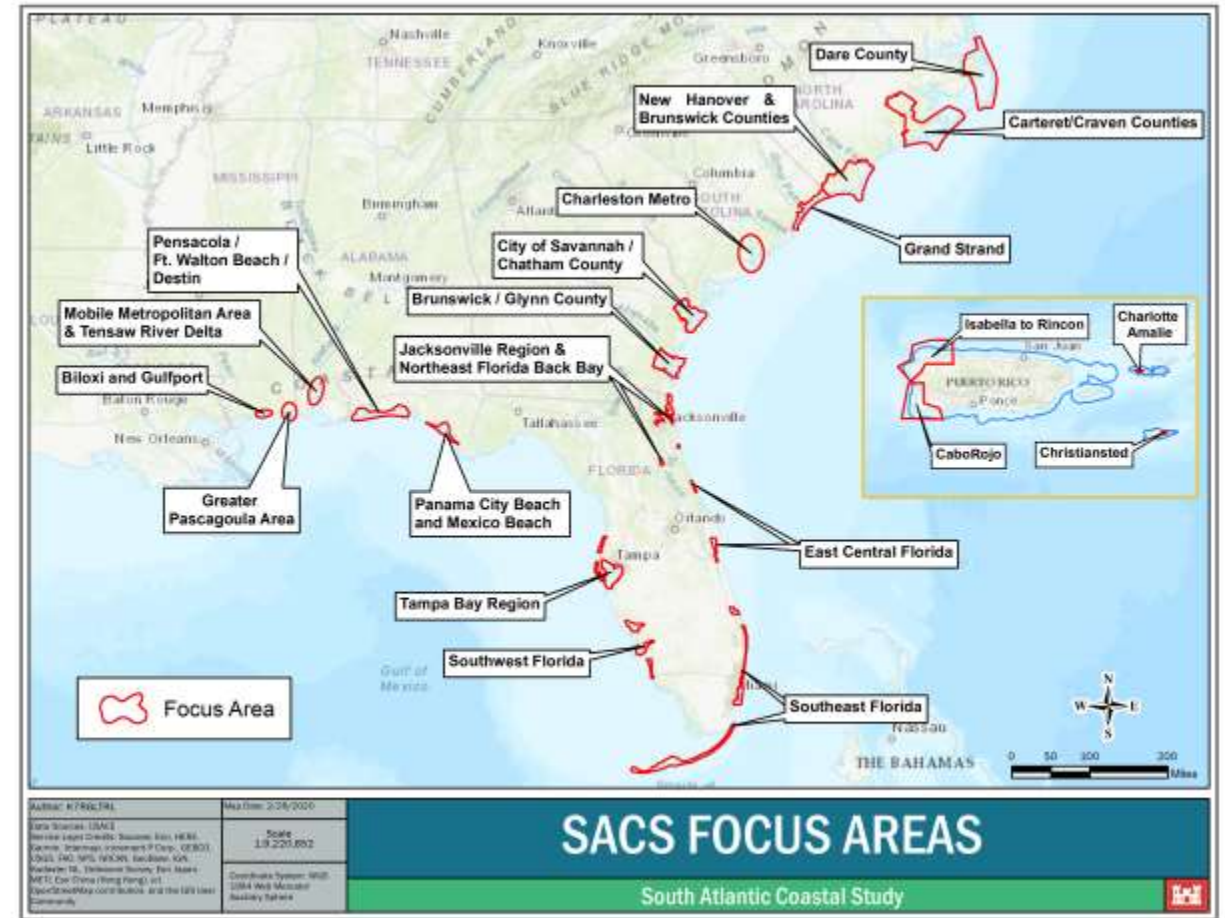
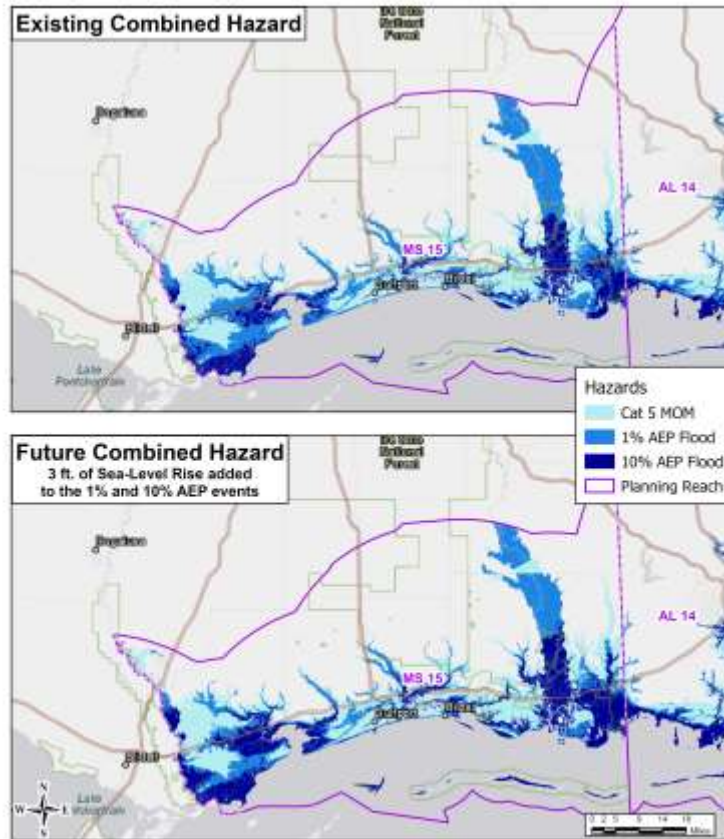
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Tier 2: Mississippi



- The State of Mississippi contains 1 SACS planning reach



- The State of Alabama contains 2 SACS Focus Areas

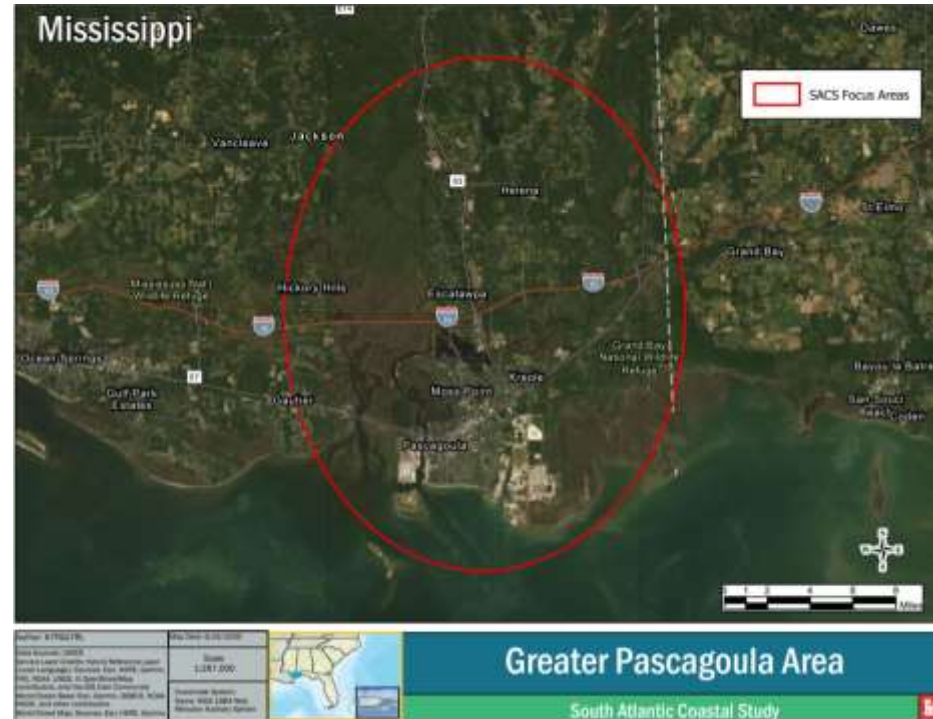
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Tier 2: Mississippi Great Pascagoula Area & Biloxi and Gulfport



- Ship Island-Fort Massachusetts, Graveline Bayou Indian Mound, Buccaneer State Park.
- Many of the prehistoric sites at risk, such as the large number of shell middens, are located in the lowlands, deltas, and wetlands surrounding the rivers and bayous. These areas are subject to increased erosion and submergence during times of storm surges and to side effects from sea level rise.
- Many of the historic structures, such as the historic houses and districts located in the communities of Pascagoula, Biloxi, and Gulfport are subject to damage from storm surge inundation and associated erosion, with increased impacts likely with the addition of sea level rise.



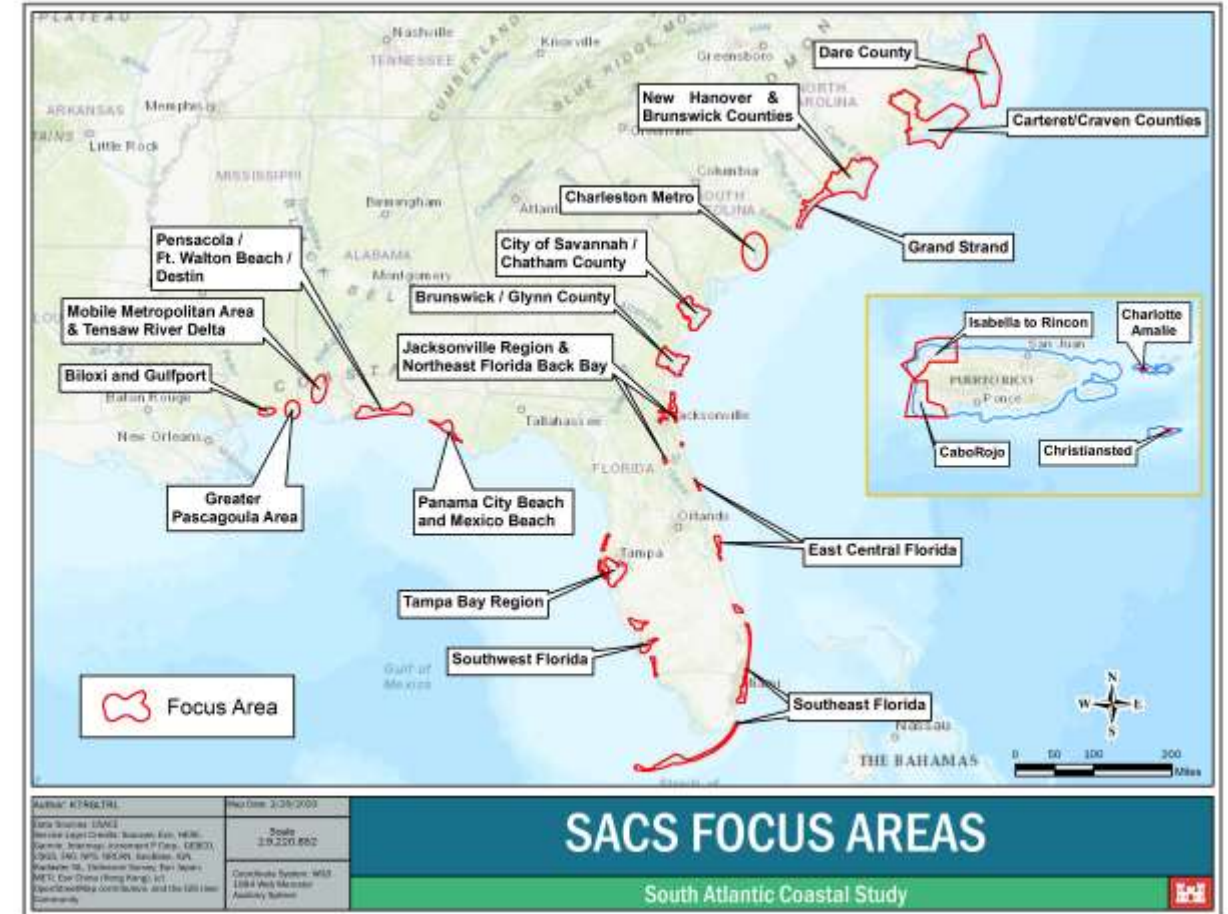
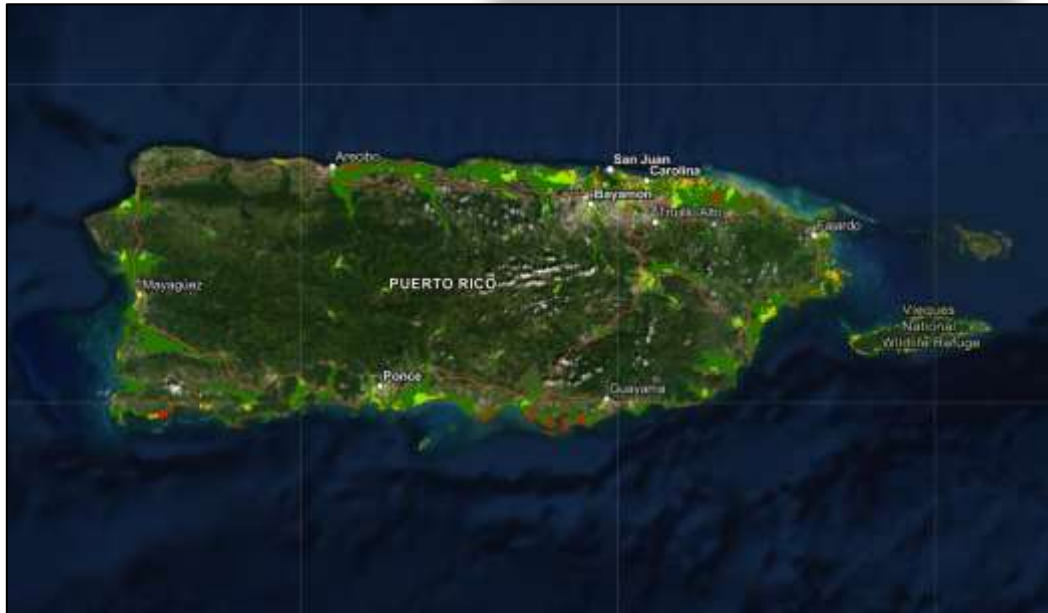
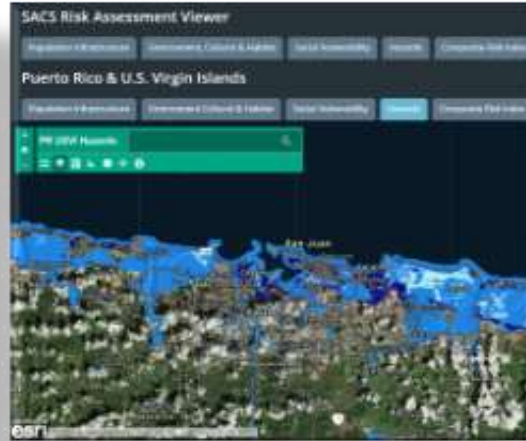
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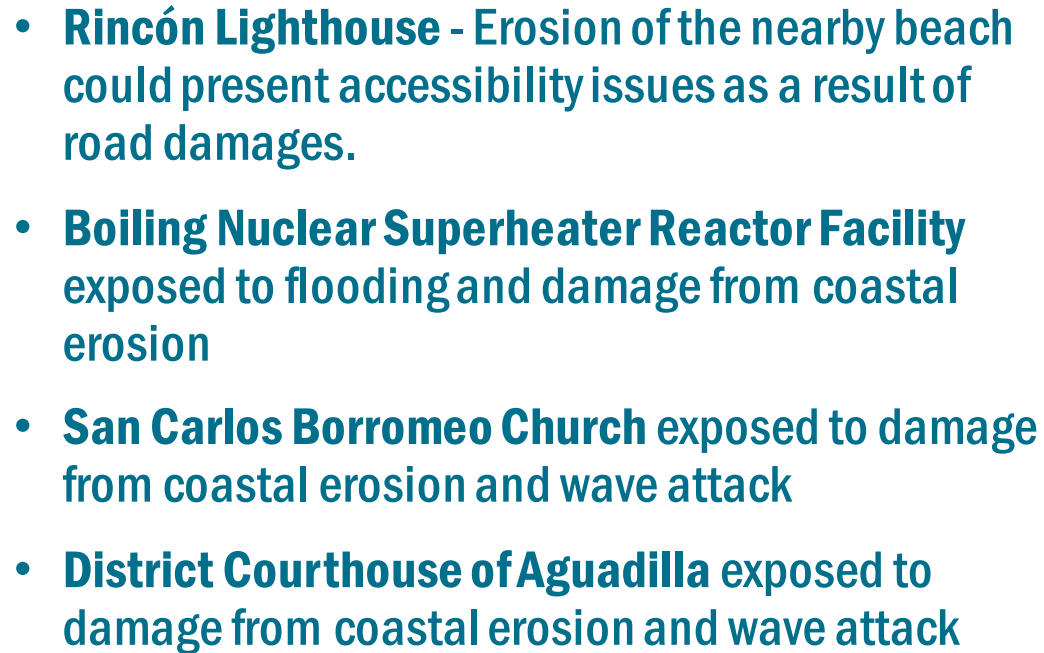
Puerto Rico

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- Puerto Rico has 4 SACS Planning Reaches



- Puerto Rico has 2 SACS Focus Areas, Isabela to Rincon, Cabo Rojo

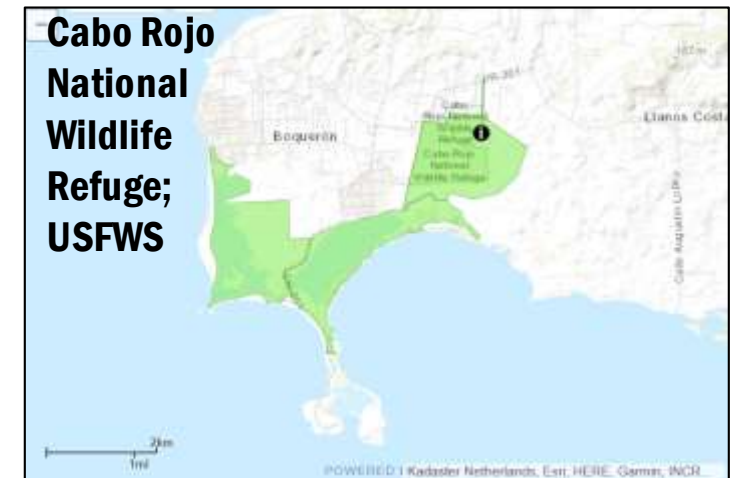
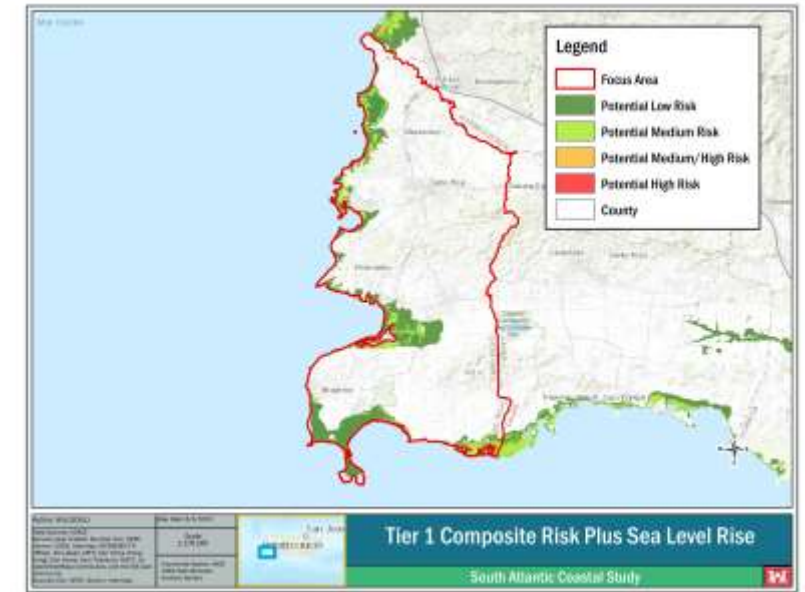




Cabo Rojo Focus Area



- **U.S. Custom House** located in Mayagüez, building is exposed to one foot of inundation during a Category 5 MOM storm. ver 3 feet.
- **Punta Ostiones** is subject to inundation from the 1-percent annual chance storm, wave attack and damage from coastal erosion
- **Cabo Rojo National Wildlife Refuge** is subject to flooding from the 1-percent annual chance coastal storm event.





Other Exposed Cultural Resources in Puerto Rico



- **Arecibo** - Shoreline erosion rates of up to 16 feet per year have been recorded. With sea level rise, this coastal community may also see wave height increases from the 1-percent annual chance storm of over 3 feet.
- **Ponce** - Several historic buildings are subject to inundation depths of up to 8 feet during a Category 5 MOM hurricane. With 3 feet of sea level rise, these resources will also be subject to inundation from the 10-percent annual chance flood event. Though man-made structures protect the shoreline of Ponce near these historic buildings, shoreline change rates have demonstrated shoreline retreat of 1 foot per year. Coastal Hazards System modeling indicates wave height increases of 4.6 feet in this area under future conditions by 2120.
- **Old San Juan** - Cultural resources within the city are subject to coastal hazards, including up to 7 feet of inundation from a Category 5 MOM hurricane. With sea level rise, many of San Juan's historic buildings become subject to inundation from the 10-percent annual chance flood event.
- **Vieques National Wildlife Refuge** - historic and archeological sites along coast subject to coastal hazards



U.S. Virgin Islands

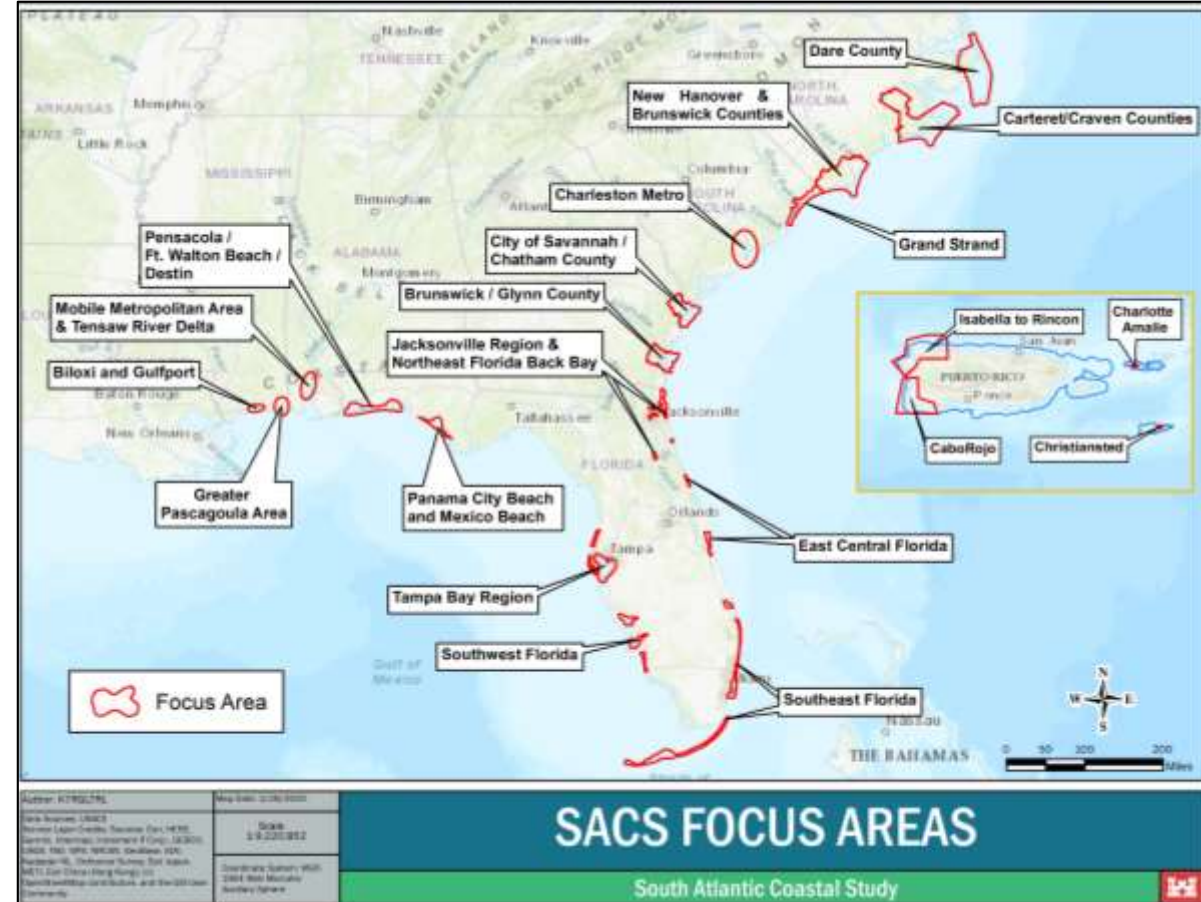
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Tier 2: U.S. Virgin Islands



- USVI has 3 SACS Planning Reaches
- USVI has 2 SACS Focus Areas
 - Christiansted
 - Charlotte Amalie

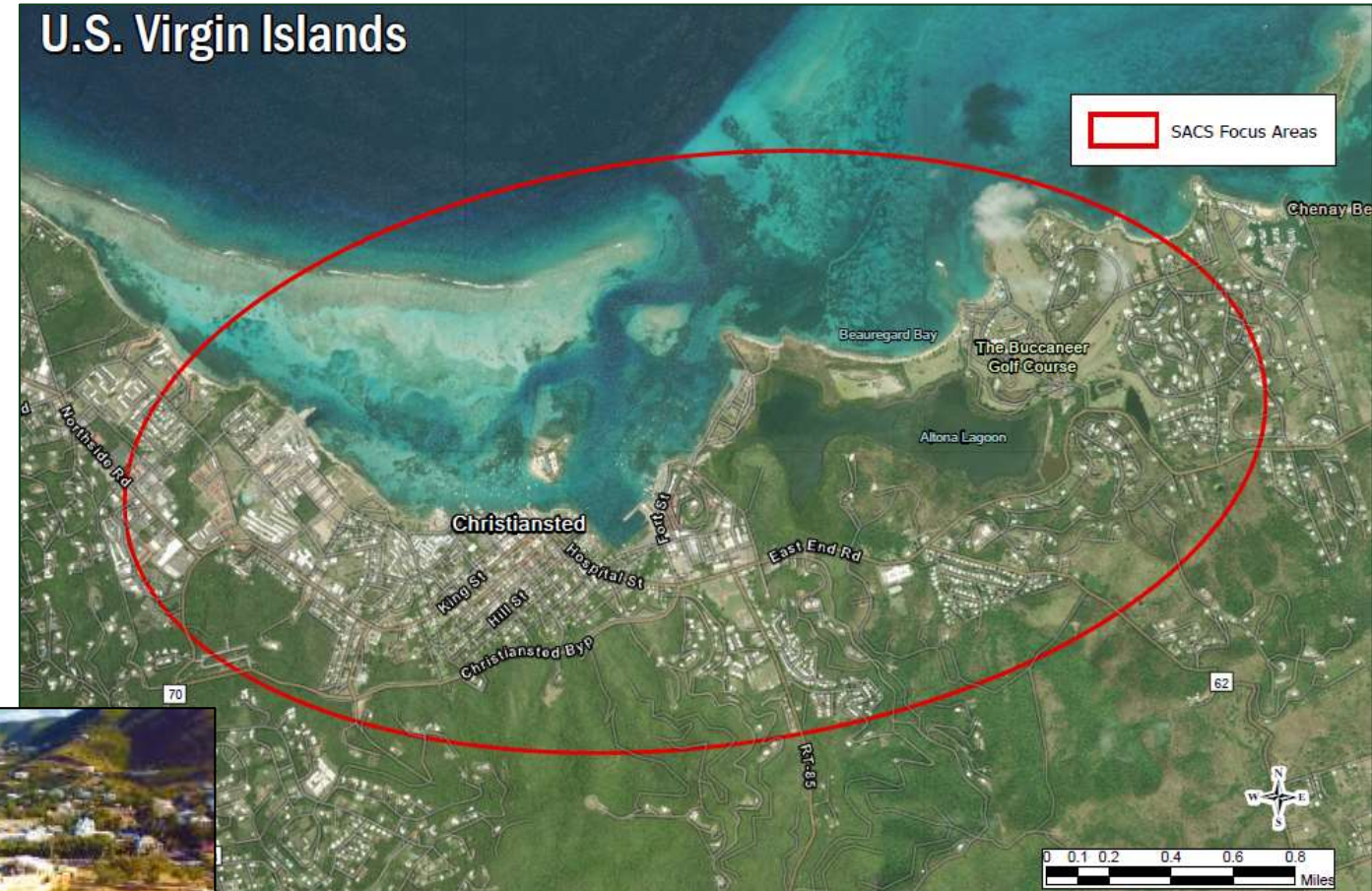
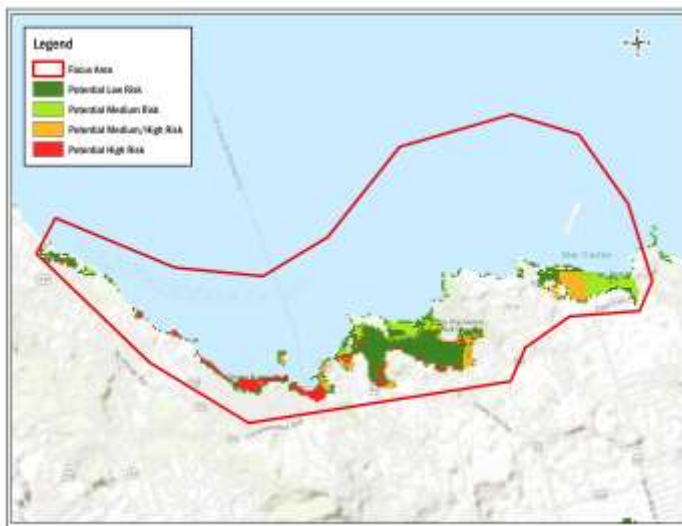




Christiansted



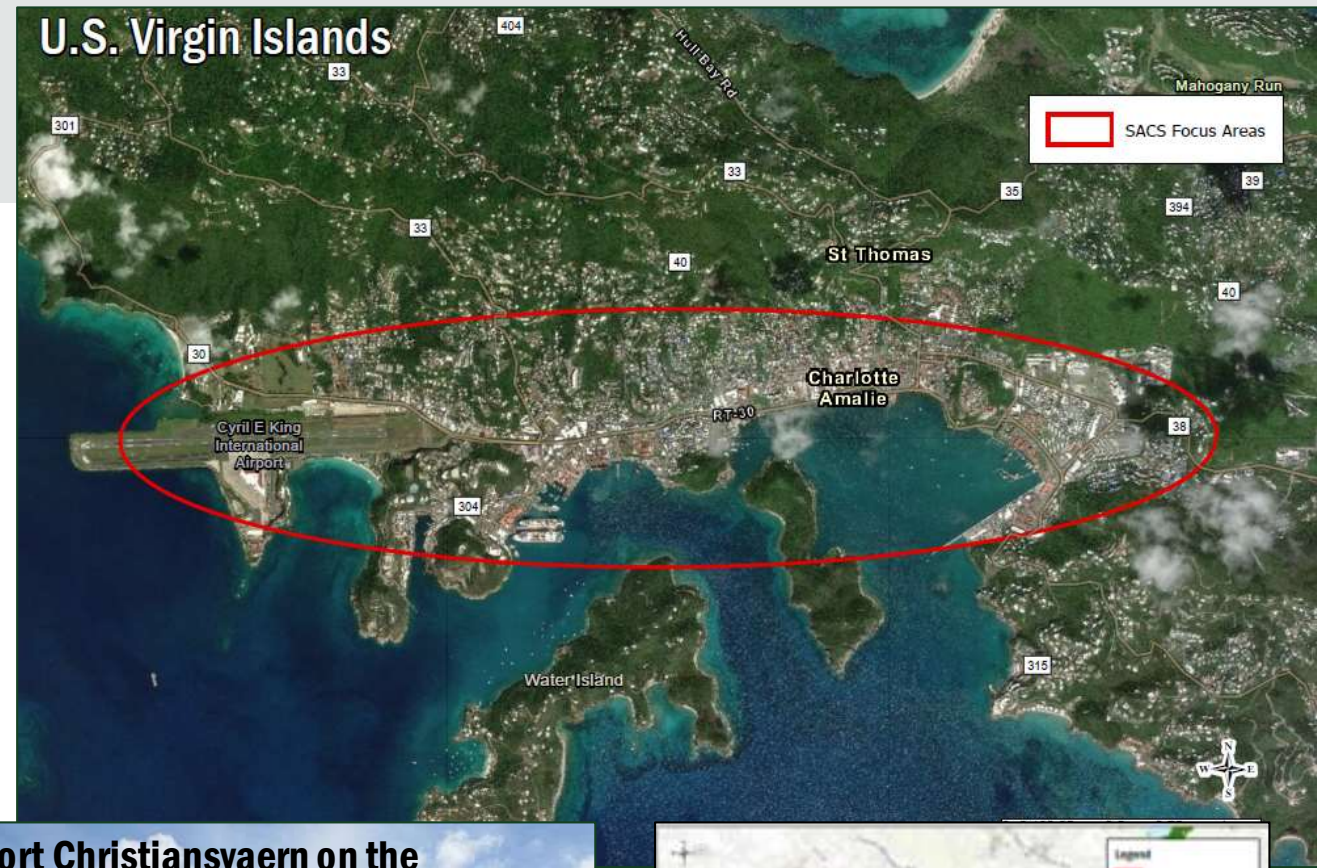
- **Christiansted National Historic District** - Because of its low elevation and proximity to the shoreline, areas of the district could potentially experience 1–5 feet (0.3-1.5 meters) of inundation during a Category 5 MOM hurricane.





Charlotte Amalie

- **Charlotte Amalie Historic District/Fort Christian** - Portions of the Charlotte Amalie Historic District, including Fort Christian, are currently within the 1-percent annual chance flood event and the Category 5 MOM inundation extent (modeled to experience up to 5 feet of inundation during the CAT 5 MOM).
- **Hassel Island Historic District** - Low-lying portions of the island are subject to up to four feet of inundation from a Category 5 MOM hurricane.



Fort Christiansvaern on the Christiansted waterfront; National Park Service





Other Exposed Cultural Resources in USVI



- **Frederiksted Historic District and Fort Frederik** - The coastal portion of the district is protected by a man-made structure, but is still exposed to future potential flooding.
- **Magen's Bay** - The bay and archeological district are subject to inundation hazards and portions of the area could experience up to six feet of inundation from a Category 5 MOM hurricane.
- **Virgin Islands National Park**





How will this information be used in SACS?



- SACS cultural risk analysis will be used in the SACS Focus Area Action Strategies
- Cultural Risk Analyses included in each state and territory appendix
- Discussions and feedback from cultural stakeholders will be incorporated into a final draft analysis supporting risk reduction strategies
- High-risk cultural areas located outside of focus areas will be documented in SACS state and territory appendices



Next Steps



- **These slides and the cultural analysis will be provided to stakeholders in a follow-up email**
- **Slides and recording posted to our website**
- **SACS Cultural Resources Risk Analysis will be used in the upcoming Focus Area Action Strategy Meetings in August and September**
- **SACS Draft Report available for public review in October 2021**



How can you provide feedback?



- **SACS email address: SACS@usace.army.mil**
- **Reach out to the SACS cultural team! Cultural team email addresses will be provided in follow-up email.**
- **Additional information on SACS can be found on the SACS website: <https://www.sad.usace.army.mil/SACS/>**



Questions and Discussion

Working Today to Build a Better Tomorrow



Thank You



ADDITIONAL INFORMATION

<https://www.sad.usace.army.mil/SACS/>

OUTREACH

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